

THE IRON AGE

THURSDAY, APRIL 28, 1891.

The Sturtevant Blower.

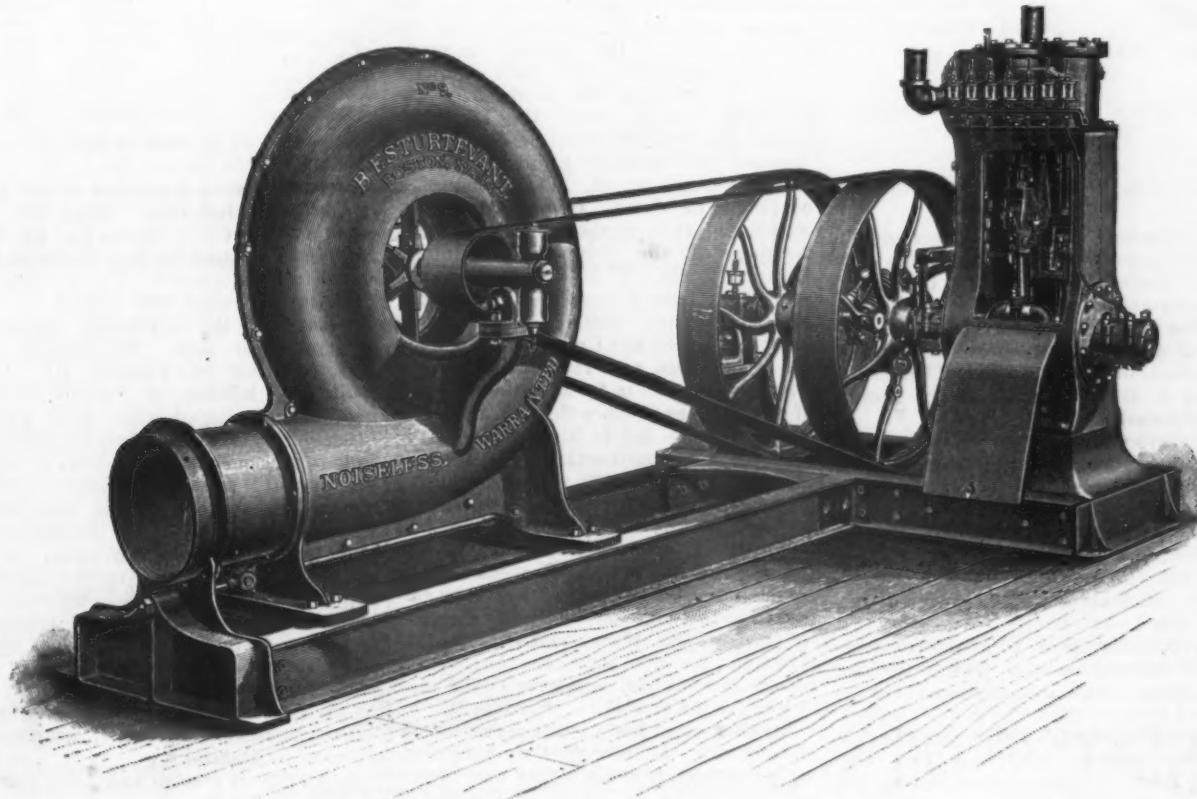
The special arrangement of steel pressure blower on adjustable bed with double upright inclosed engine shown in the accompanying cut is a recent design by the B. F. Sturtevant Company of Boston.

The blower is of their well-known steel pressure blower type, but mounted on an I beam foundation frame, to which it is securely bolted and upon which it is readily adjustable by means of the adjusting bolt shown at the outlet end. By the use of this bolt constant pressure is maintained on both belts, avoiding stoppage for relacing the belts, and making it possible to run continuously without the disastrous effects incident to loss of time by shutting down to tighten belts when a heat is in the

size, so that friction is reduced to a minimum. The cylinders are bolted to the frame and can be easily removed for re-boring. The oiling of all parts is accomplished by a series of sight-feed oil cups placed together upon a bracket attached to the frame of the engine. From these oil cups tubes lead to the various bearings, so that the lubrication is always positive and easily accomplished. The perfect regulation of the engine is secured by the shaft governor, forming a part of one of the pulleys, and acting through the eccentric to change the throw of the valve and vary the cut-off from 0 to seven-eighths stroke. All three bearings are of the brush oiler type and provided with reservoirs from which all surplus oil is fed back to the bearing. Owing to its compact nature this arrangement of engine

The Union Switch and Signal Company.

E. H. Goodman, president and general manager of the Union Switch and Signal Company of Pittsburgh, has issued a statement showing the financial condition of that concern in detail, and in comparison between 1889 and 1890 it shows an increase of 34 per cent. in the business of 1890 over 1889. The report shows the earnings from sales for the 12 months ending December 31, 1890, were \$760,869.08. The expenses were as follows: Operating expenses, \$647,708.24; settlement of old accounts, \$20,839.95—a total of \$668,548.19. This leaves net earnings over and above operating and other expenses amounting to \$92,320.89. The interest on bonds,



THE STURTEVANT STEEL PRESSURE BLOWER.

foundry. The outlet is arranged in telescopic form, so that the adjustment of the blower in no way affects the position of the pipe.

Firmly connected to the foundation of the blower is the engine foundation, supporting the engine and its extended shaft, upon which are placed two pulleys or band wheels. The engine is specially designed by this company, and is double in form, comprising two cylinders supplied by a single valve, and acting upon the shaft through the two cranks, which are situated opposite each other. By this means the engine is perfectly balanced, and the highest rotative speed may be attained. To avoid all danger to the bearings from the flying dust, so common in localities where this blower is used, the entire engine is inclosed, although its parts are readily accessible through the door shown in the cut. In addition to the advantages, the inclosing of the parts prevents the throwing of oil, and makes it possible to leave the engine unattended. All wearing parts are of steel and of large

and blower is readily portable, and the power required for running the blower being independent of any other means of driving, the whole apparatus may be put in use at any time independently of any other power plant in the establishment.

In the case of the Pittsburgh Reduction Company against the Cowles Electric Smelting and Aluminum Company, in Cleveland, for alleged infringement, the plaintiffs filed a motion asking that the defendants be enjoined from manufacturing pure aluminum. Judge Ricks of the United States Circuit Court denies the motion, but an order may be entered restraining the defendants from increasing their manufacture of pure aluminum over their present output, or from selling at a price below that at which it is offered by the complainants, which, unless otherwise charged, may be fixed at \$1.50 per pound, and from publishing or circulating any letters, circulars or advertisements in any way assailing the complainants' patents.

\$17,766, and also the interest and discount, which foots up to \$10,250.96, a total of \$28,016.96, being deducted, leaves net earnings over expenses and interest of all kinds, \$64,303.93. The report shows the company's finances to be as follows: Assets available—cash on hand, \$24,134.99; bills and accounts receivable, \$444,278.50; material on hand, at cost, \$119,893.54; total available assets, \$588,307.03.

Assets unavailable—Real estate, \$149,080.22; machinery and fixtures, \$92,045.04; hand tools, \$16,911.69; office furniture, \$2332.74; sundry stocks, \$12,328; patents at capitalized valuation, \$1,088,240.36. Total unavailable assets, \$1,310,938.05; making the assets of all kinds aggregate \$1,899,245.08.

Liabilities—Preferred stock, \$370,100; common stock, \$964,650; capital stock, \$33,300; first mortgage bonds, \$296,100; bills payable, \$378,854.28; accounts payable, \$94,243.98; interest on mortgage bonds, accrued, but not due, \$5562; mortgage on Swissvale property, \$15,000;

total liabilities of all kinds, \$2,157,810.26; balance to debit of profit and loss, \$258,565.18.

The contracts made during the year 1890 were as follows: For interlocking switches and signals, \$458,173.80; electrical signals, bells, &c., \$143,694.23; frogs and switches, \$82,404.70; sundries, \$61,821.47; total, \$746,094.20. The contracts for 1889 were as follows: For interlocking switches and signals, \$372,342.82; electrical signals, bells, &c., \$35,881.17; frogs and switches, \$65,830.81; sundries, \$81,071.50; total, \$551,126.80, showing an increase of \$190,967.90, equal to 34 per cent.

A circular letter issued by the concern to the stockholders says: "We have submitted our plans, and are estimating for over \$1,000,000 worth of pneumatic interlocking and block signaling, and for over \$400,000 worth of mechanical interlocking switches and signals. The Chicago, Burlington and Quincy, the Harlem line of the New York Central, the Jersey Central and the Pennsylvania railroads have stated through their representatives that the pneumatic block signal has given satisfaction, and we have every reason to believe that nothing now remains but the question of appropriation of money for them to extend this class of work."

The Genesis of the Edgar Thomson Blast Furnaces.*

BY WILLIAM P. SHINN, PITTSBURGH, PA.

Mr. Gayley's admirable paper on the "Development of American Blast Furnaces" has set forth very fully the history of the development of the Edgar Thomson furnaces since the construction of furnaces A and B, but it throws no light on the genesis of these furnaces. That earlier history it is the purpose of the present paper to record.

Mr. Gayley truly says: "A new era in the manufacture of pig iron began in 1880 with the putting in blast of the Edgar Thomson furnaces." That era had its beginning with the construction of furnace B, which was not in any sense an accident, but the result of the most careful design, based upon truly scientific deductions from known facts.

In September, 1878, when the construction of furnaces A and B was decided upon, the writer was general manager of the Edgar Thomson Steel Company, Limited, and the preparations for their construction were in my charge. For some two years I had been very desirous of having the company (in which I had a large interest) erect their own furnaces, and I had been gathering information bearing upon the subject.

I had visited many furnaces, and invariably was told by the manager, in starting on our inspection of the plant, that "we are a little short of steam this morning" (item—have plenty of boilers); or, "we are short of blast to day" (item—have greater blowing capacity); or, "we have been a little short of hot blast to-day" (item—have a better supply of stoves); or, "we are very short of gas for our boilers" (item—have a ready means of firing in addition to furnace gas), until I had become convinced that a great improvement could be effected by supplying these "items" and preventing these chronic shortages. Again, I had noticed that when the blowing engine and hot-blast stoves of two furnaces had been concentrated

upon one stack, as had been done in the Shoener furnaces in Pittsburgh in 1877, a great increase in output was the result. In the year 1877 Furnace No. 1 was out for repairs, and the whole blowing and blast-heating capacity was used upon No. 2, with the result of increasing its output from 1042 tons per month to 1521 tons. Thus the discovery that increased blast would raise the output was not original with Mr. Julian Kennedy, although he made very good use of it, as described by Mr. Gayley.

While the plans were under consideration, and before any of the details had been determined upon, I was asked by two of the partners, both interested in the Lucy Furnace, what action I was taking in regard to the work. I replied that there were two important questions to be decided before the plans could be prepared—whether we should have compound engines and whether we should have iron or fire-brick stoves, and if fire brick, of what type. The answer was: "We want no compound engines or fire-brick stoves. Build a furnace that will make 100 tons of Bessemer iron per day. The Lucy Furnace does it, and you cannot do better than to follow the Lucy"—i. e., copy the design and details. I argued to the contrary, alleging that possibly as much improvement over the Lucy Furnace might be made as was made over the Struthers Furnace when the Lucy was built. My view prevailed, and I was authorized to "send out a commission" to investigate and report. That commission consisted of James Hemphill of Pittsburgh, the eminent mechanical engineer, member of the firm of Mackintosh, Hemphill & Co.; H. M. Curry, then manager of the Lucy Furnace, and the writer. The commission visited every furnace plant but one in the United States having fire-brick stoves, and returned to make a unanimous report in favor of the adoption of the Siemens-Cowper fire-brick stove.

That report led to the revolution in blast-furnace construction and practice which began in 1880, as stated by Mr. Gayley. The report was unanimously adopted by the Board of Directors. As Taws & Hartman of Philadelphia were the sole agents for the Siemens-Cowper stoves in the United States, they were employed as the engineers and were directed to prepare the plans, and to John M. Hartman, no less than to the writer, should be ascribed whatever credit may be due for the erection of Furnace B.

Another point had caught my attention in observing the results of working furnaces—namely, that when they were blown out for relining, the angle at the top of the "well" had always been cut away from the original form, and there were reasons for believing that this cutting away took place during the first three months of the blast. Hence I was led to query, why put in so many fire brick where they will simply be melted away, at an expense both for brick and fuel?

Of Furnace A not much more need be said than has been mentioned by Mr. Gayley. Originally a furnace with an 11 or 12 foot bosh, it was bought to save a debt, and when erected as Furnace A it was made as large as the mantel would permit. With an extreme diameter of 18 feet at the bosh, the hearth was 8 feet 6 inches in diameter, or almost 66 per cent. of the bosh diameter. This small furnace of only 13 feet bosh produced in its third month, according to Mr. Gayley, 671 tons of output in a week, or an amount nearly equal to the best output of the Lucy Furnace with 20 feet bosh; thus were the large hearth, and straight inwalls fully justified. My intention was to have made the hearth Furnace B 12 feet in diameter, and the side line straight from the bosh to the bottom, forming of the lower section

a true frustum of a cone; but in some of these details my advice was not followed, particularly after I left the company on October 1, 1879.

In the matter of the blowing capacity, the highest volume of air blown into the Lucy Furnace had been 15,500 cubic feet per minute. The engines for Furnace B had been designed for blowing 18,500 feet per minute, and the stoves contained 92,000 square feet of heating surface. It is stated by Mr. Hartman, in his discussion of Mr. Kennedy's paper on "Hot-Blast Stoves at the Edgar Thomson Furnaces,"* that Mr. Kennedy increased the volume of air blown into Furnace B to 28,000 cubic feet per minute, and the stoves heated that enormous volume to 1050° F., which shows that the allowance of power and capacity for heating was very liberal, even for the large volume of air provided for.

The best work of the Lucy Furnace on a mixture yielding 65.3 per cent. iron had been 107 tons of pig in 24 hours, while Furnace B, working on a mixture yielding only 55 per cent. iron made on the first run:

	Average tons per day.
1880.	
May.....	3,718 120
June.....	4,318 144
July.....	4,345 140
August.....	4,601 148
September.....	4,221 140
October.....	4,722 152

Here was an increase in average output over the Lucy's best work of over 30 per cent., and that on a mixture of ore yielding one-sixth less iron. Truly this indicated a "new era in the manufacture of pig iron," and pointed the way which has been so skilfully followed by Mr. Kennedy and Mr. Gayley, until the output has been increased to the enormous amount of 380 tons per day. Mr. Gayley truly says, referring to Furnace B: "But while the hearths of various furnaces had been enlarged after they were in blast, yet no American furnace up to that time had been constructed with so large a hearth as this one of the Edgar Thomson works. In another respect this furnace was well prepared by its designers for a high productive capacity—viz., in its equipment. Fire-brick stoves of the most approved type were erected. Substantially built blowing engines were provided, and they were rendered efficient by an ample supply of boilers—a point in which other furnaces were then sadly lacking. At the same time all the flues and mains were constructed sufficiently large, and in the most substantial way. In fact, no furnace previously erected had been planned on such a liberal basis; consequently, large yields were to be expected."

I have shown that these "liberal preparations" for a "large yield" were not accidental or fortuitous. They were the result of design, earnestly insisted upon by the writer of this paper, endorsed by the committee, Messrs. Hemphill, Curry and Shinn, and most ably executed by Mr. Hartman.

"Honor to whom honor is due."

Three new batteries, 16 mortars in each, will be built at Sands' and Willet's Points, to guard the entrance to New York from Long Island Sound. On the application of Lieut.-Col. King of the United States Engineers, a bill facilitating the purchase of the location by Government passed both branches of the Legislature on Tuesday. The mortars to be used weigh 13½ tons each and the shells 600 to 800 pounds.

McHarg & Co., representing the Columbus, Ohio, Steel Company, purchased a 17-mile railroad connecting with Flemingsburg, Ky., for \$55,100.

* Transactions, Vol. X., 495.

* Read by title at the New York meeting of the American Institute of Mining Engineers, but not published until after the New York meeting of the Iron and Steel Institute in October, when Mr. James Gayley's paper on "Development of American Blast Furnaces" was read and discussed.

The World's Fair of 1893.

Location of the Buildings.

A map is herewith given of Jackson Park, Chicago, showing the location and dimensions of the principal buildings as now decided for the World's Columbian Exposition of 1893. Jackson Park contains 586 acres, but it will be seen from the map that its available area for building purposes will be well covered. If more space should be required the managers can use the Midway Plaisance, connecting Jackson Park with Washington Park, and containing 80 acres; also Washington Park, containing 371 acres. It will be observed that arrangements are to be made for receiving visitors to the exposition both by water and rail. A long pier will extend out into Lake Michigan, and a harbor will be constructed for the protection of pleasure craft from boisterous winds or waves. Visitors arriving by rail will be landed from cars inside the grounds, and will have no occasion to cross any tracks, but will pass to and fro through subways. The handling of trains at this terminal will be greatly facilitated by the arrangement of the tracks in a loop, thus avoiding all switching and recoupling cars. This is a decided improvement on the railroad terminals in use at the Centennial Exposition at Philadelphia in 1876 by which much time was necessarily lost in making up trains for the return trip from the grounds. It will be seen from the map that Jackson Park will possess picturesque features in the small lakes with which it is dotted. These are to be so connected and improved that they will form a most attractive part of the inclosure for the exposition. The northern limit of Jackson Park, Fifty-sixth street, is 6½ miles from the Chicago Court House, which is in the heart of the business section of the city.

It had been originally intended to use the Lake Front Park also for World's Fair purposes. This is a narrow strip of ground bordering on Lake Michigan and very close to the heart of the city. But numerous objections arose to that scheme, and the exhibits will now be concentrated at Jackson Park, although it is possible that the Lake Front Park may yet be used for purposes of some kind in connection with the fair. The directors had gone so far as to erect a temporary structure on the lake front in January for the use of the Construction Bureau, but that has since been removed to Jackson Park, where work is now being actively prosecuted in preparing the grounds for laying foundations for buildings. Steel rails were purchased the past week for tracks to be laid throughout the grounds for conveying building material. Designs for the principal buildings have about been completed, and contracts for their erection are

to be let as speedily as possible. It is the expectation of the directors that all the preliminary work will be settled by the advent of summer and that a great deal will have been accomplished toward the construction of the buildings before the end of the present year.

In every respect Chicago will endeavor to surpass previous achievements in the line of international expositions. Beautiful as was the site—the Champs de Mars—and its approaches, and captivating to the admiration as were the graceful and imposing edifices at the Paris expositions of 1878 and 1889, it is believed that they will be surpassed by those of the Columbian Exposition. The Chicago site is four times as large and has a frontage of 2 miles on Lake Michigan, the second largest body of fresh water on the globe. The buildings will cover twice the area and cost twice as much as did those at

tower. In the northern portion of the grounds he will see a picturesque group of buildings, perhaps 40 or 50 of them, constituting a veritable village of palaces. Here, on 100 acres or more, beautifully laid out, will stand the buildings of foreign nations and of a number of the States of the Union, surrounded by lawns, walks and beds of flowers and shrubbery. How many of them there will be cannot be stated yet, but it is certain that they will be numerous.

The Buildings.

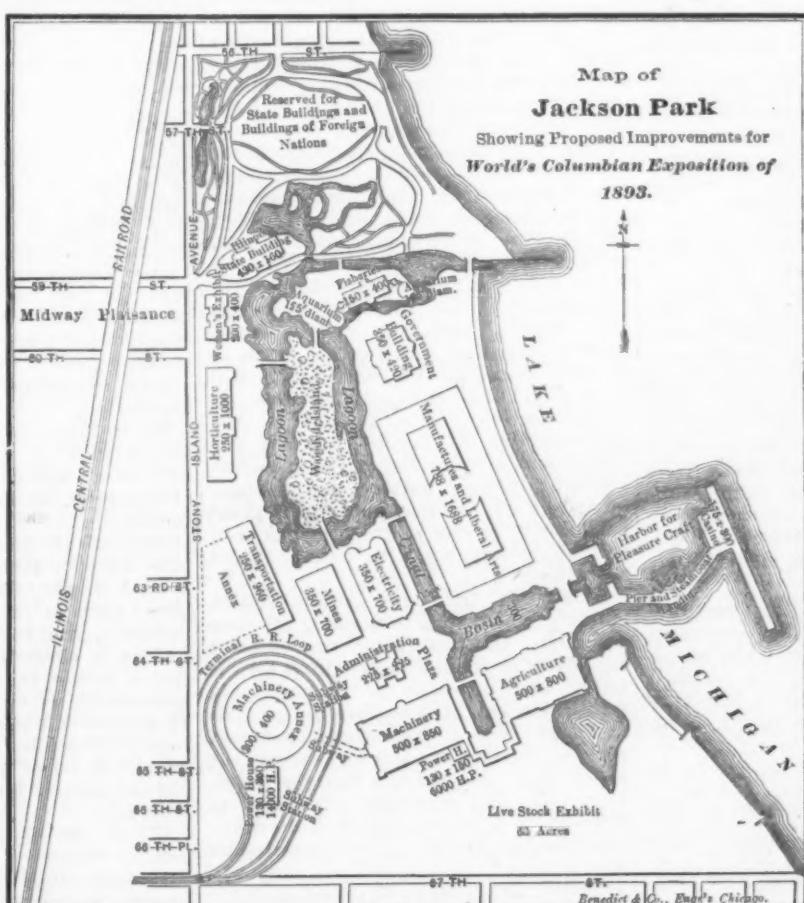
In this portion of the park, too, will stand the Fine Arts building, which is to be a magnificent palace costing \$500,000. Just south of the foreign and State buildings may be observed a considerable expanse of the lagoon, with inlet to the lake, and encompassing three islands. On the largest one will stand the United States

Fisheries building, 700 feet in length, and flanked at each end by a curved arcade connecting it with two round pavilions, in which will be aquaria and the tackle exhibit. This building, designed by Henry Ives Cobb of Chicago, will be in the Spanish style and conspicuous because of a liberal use of color.

A little further south, across an area of the lagoon, will be the United States Government building measuring 350 x 420 feet and having a dome 120 feet in diameter and 150 feet high. It will be constructed of stone, iron and glass, classic in style, cover 4 acres, and cost \$400,000. In it will be a very complete exhibit from the several federal departments, &c.—War, Treasury, Agriculture, Interior, Post Office, Navy, Smithsonian Institution and National Museum. On the lake shore, east of its building and in part in the intervening space, the

Government will have a gun battery, life-saving station complete with apparatus, a lighthouse, war balloons, and a full size model of a \$3,000,000 battleship of the first class.

This will be constructed on piling alongside a pier, being thus surrounded by water and apparently moored at a wharf. The "ship" will be built of brick and coated with cement. It will be 348 feet long, 69 feet wide amidships, and will have all the fittings and apparatus that belong to the most approved war vessel, such as guns, turrets, torpedo tubes, torpedo nets and booms, boats, anchors, military mast, &c., and a full complement of seamen and marines detailed from the Navy Department. The visitor arriving by steamboat will pass very near and obtain an excellent view of the shore portion of the Government exhibit. He will probably see also, anchored near by, a Columbus fleet—a reproduction, as near as may be, of the one which the great discoverer sailed from Palos—and also a Government revenue cutter and one or two torpedo boats.



The Main Building.

Steaming by the Government exhibits the visitor will come abreast of the largest building of the exposition—that of Manufacturers and Liberal Arts. It will measure 1700 x 800 feet, with two interior courts, and at its center a great dome 350 feet in diameter. Surrounding it on all sides will be a porch two stories in height, affording a delightful promenade and a view of the other buildings, of the lagoon, alive with rowboats, gondolas and pleasure craft propelled by electricity, and of the grounds generally. This building, which will be of French renaissance, is designed by George S. Post of New York.

After passing this immense structure, which will be three times as large as the largest building at the Paris Exposition, being nearly 400 feet longer and twice as wide, and covering more than 81 acres, the steamboat will drop alongside the pier. This, as designed by Augustus St. Gaudens of Paris, will be a thing of beauty and a source of much enjoyment to visitors. Two parallel piers will extend from the shore about 400 feet, where taking out curves, they will partially inclose a circular harbor, from the center of which will rise, on a great pedestal, a commanding statue of Columbus or of the Republic. On the embracing portions of the piers will stand 44 exquisite isolated columns, representing the 44 States, each one bearing over its capital the coat of arms of the State it symbolizes. Beyond the harbor the north or main pier will extend out into the lake to a total distance of 1500 feet, taking there a deflection several hundred feet to the southward, and having at its extremity, rising from the water on a stone foundation, an immense Greek pavilion 200 feet in diameter, gaily colored and adorned. Here visitors may sit and enjoy the cooling lake breezes, listen to the fine music and obtain a magnificent view of the great Exposition buildings and other shore attractions.

From the pier, extending westward across the park, will be a long avenue or court, several hundred feet wide, affording, Chief Burnham says, "a spectacle unparalleled in the world—a marvel of architectural grace and sublimity, an exposition in itself." To the right, at the entrance of this grand avenue, will be the great Manufacturers building, and farther back the other attractions already referred to. To the left will be the Agricultural building, measuring 800 x 500 feet, designed by Architect McKim, of New York. This, Chief Burnham says, will be a "dream." It will be severely rectangular in form, but made elaborately ornate with statues and other relief work. Its cost will be half a million. Between this and the huge Manufacturers building juts a branch of the lagoon. All down this grand avenue, encompassing a beautiful sheet of water, will stand imposing buildings, along the majestic *facades* of which will sweep the gaze of the visitor until it rests upon the administration building of the exposition, which terminates the vista nearly a mile distant. Upon traversing this "Long Walk," as it may be called; after the famous way from Windsor Castle to Ascot, the visitor will find it a veritable Bois de Boulogne or Versailles in point of beauty of effects produced by landscape architecture and gardening.

Passing the Agricultural building the visitor will come to the great Machinery Hall, which lies to the westward of it and which is connected with it by a horseshoe arcade doubling a branch of the lagoon. It will be nearly identical with it in size and cost, but it will differ from it considerably in appearance, being "serious, impressive and rich in architectural line and detail," Chief Burnham says, "and the

best work of its designers, Peabody & Stearns of Boston."

The Administration Building.

Opposite Machinery Hall and north of it, in the center of the "Long Walk," will stand the Exposition Administration building. This will be one of the most imposing, and in proportion to its size the most expensive one, of the large structures. Richard M. Hunt of New York, president of American Institute of Architects, is its designer, and he has made it stately and simple yet exceedingly striking in appearance and an excellent representative of Italian renaissance. It will cost \$650,000, be adorned with scores of statuary figures and be surmounted by a gilded dome rising 250 feet, or about the height of the Auditorium tower. In it will be the offices of the National Commission and Local Directory, and the headquarters of all the numerous officials connected with the management and regulation of the exposition.

To the northward of the Administration building, on either side and facing the grand avenue, will be two more immense buildings, one for the electrical and the other for the mining exhibit. These will be about equal in size, covering each a little more than 5½ acres. Both will be of French renaissance. The former, designed by Van Brunt & Howe of Kansas City, will be the more expensive, however, costing \$650,000; while the latter, designed by S. S. Beman of Chicago, will cost \$350,000. The Board of Architects have declared that both will be exceptionally imposing structures. North of these buildings, in the main lagoon, will be an island of 20 or 30 acres in area. It is the intention to have this kept as wild and primitive as possible. There the visitor may wander through a miniature "forest primeval," pathless and untransformed by art, and may hunt the fragrant wild flower or the saucy chipmunk, and generally commune with nature in its native haunts.

Proceeding from the Administration building still further westward, or, more accurately, southwestward, the observer will arrive at the railway facilities for the arrival and departure of visitors. Six parallel tracks will sweep into the grounds in a huge circle at the extreme southwest portion, entering and leaving at nearly the same point. Around this loop the trains, in arriving and departing, will sweep at intervals of a few minutes, and the depot accommodations will be so extensive and well arranged that it is believed there will be almost no confusion or crowding.

The Machinery Annex.

Within this loop made by the railway tracks will be the machinery annex—a huge building covering several acres and containing the overflow exhibits from Machinery Hall, with which it will be connected by subways. Within the loop also will be the main power house, from which power will be furnished to such buildings on the grounds as require it. To the southward of the line of buildings which are ranged along the south side of the grand avenue is a vast open expanse which will be devoted to the live stock exhibit. Here immense stock buildings, a show ring and whatever else will contribute to the success of the live stock feature of the exposition will be constructed.

Jackson Park resembles a right-angled triangle in shape. The visitor has thus far, on his tour of inspection, traversed the lake shore or hypotenuse of the triangle, and across the southern end of the base. It remains only to turn toward the north and note the structures ranged along the perpendicular. The first one arrived at is the Transportation building. This will be Romanesque in style and one of the largest

of all, measuring 1020 x 260 feet, exclusive of a great annex in the rear. The Transportation building together with the depots will cost \$1,000,000. North of this will be the Horticultural building, another immense structure, 1000 x 150 feet, with three domes, one at each end and a larger one at the center. This will be constructed chiefly of glass and iron, and will cost \$250,000.

The Women's Building.

Still further north and directly opposite the park entrance of Midway Plaisance, will stand the Women's building, which, it is expected, will be one of the chief objects of interest on the grounds. It is to be 400 x 200 feet in dimensions, two stories high, and will cost \$200,000. The exterior design will be furnished by a woman architect. Here the Lady Managers will have their headquarters, and here will be collected a doubtless wonderful exhibit illustrating the progress and attainments of women in the various branches of industry.

The Proctor Tower.

Passing the Women's building the visitor can turn toward the northeast and inspect the foreign and State buildings in the northern portion of the park, of which he is supposed to have caught a general view from the steamboat deck, or he can turn sharply to the west into Midway Plaisance and ascend the Proctor Tower. This will be constructed of steel and be 1050 feet high, or about 100 feet higher than the Eiffel. From its top the view obtainable of the exposition grounds and buildings, and of the great city lying to the northward will be magnificent beyond all description.

West of the tower, along the Plaisance and overflowing into Washington Park will be a large and curious aggregation of structures, including probably some of the foreign and State buildings, and many of semi-private construction, and of a nature which cannot yet be described. Almost innumerable structures and exhibits, such as reproductions of famous buildings, &c., most of them novel and striking in character, have been proposed, and it is not yet possible to tell how many or which of them will be erected. That there will be an astonishing array of them there can be no doubt, and unquestionably some of them will be important and exceedingly interesting features of the great fair.

All of the important buildings will stand on terraces 4 feet above the general park level, thus greatly improving the general landscape effect, and rendering their own appearance more imposing. From scores of domes and towers and minarets flags and streamers will be floating, and both the exterior and interior of the buildings will be "warm," with a liberal display of color. The beautiful park, with its magnificent array of architecture, will surely present one of the finest spectacles the eyes of man ever beheld.

Appropriations for the Fair.

It is announced by authority that thus far the various State governments have appropriated \$1,290,000 for separate buildings and special exhibits, that appropriations of \$2,325,000 are pending and will very probably be made, and that \$2,115,000 will be raised from outside sources for special State exhibits, making in all a grand total of \$5,730,000 regarded as reasonably certain to be expended in that way. The grand total of all the appropriations contemplated by the United States, the Exposition Company, the States and Territories, corporate bodies, trade associations, manufacturers and foreign nations up to the present time is stated to be about \$32,000,000; and still there is more to follow.

The Oliver Chilled Plow Works.

The Oliver Chilled Plow Works, at South Bend, Ind., of which the South Bend Iron Works are proprietors, occupy a tract of about 40 acres of land, and are claimed to be the largest distinctive plow works in the world. The buildings, which at first, in 1855, were few in number, have been added to from year to year until the vacant ground now remaining from the 40 acres is small in area. There are numerous departments in these immense works, among which are the foundry, which is 750 feet long and 220 feet wide; the warehouse, which is equivalent to one mile long and 25 feet wide, top houses, mill rooms, annealing rooms, polishing room, wood shops, machine shops, pattern room, smith shops, paint shops, japanning department, boiler room, engine room, stock room, oil house, electric light plant, steel department, sulky, gang, and steel plow fitting department, electric plating department, fire department and offices, each of which is supervised by a foreman. The steel department is a new and important feature rendered necessary by the heavy production of Oliver's steel plows. Steel parts take the place of forgings in many cases. Formerly all steel needed at the works had to be ordered from Pittsburgh or other distant points. The company now have their own crucible steel plant and make the steel castings which they need. They also make their own malleable-iron castings. The grinding department is a room 60 by 200 feet in size, and contains more than 100 grindstones ranging from 5 to 6½ feet in diameter, and from 1200 to 1500 tons of them are worn out in a year. The engine room includes two Corliss engines of 600 horse-power each, with fly wheels 24 feet in diameter. The works give employment to more than 1000 persons.

The facilities for shipments are unexcelled. On one side of the main warehouse are the tracks of the Lake Shore and Michigan Southern Railway, on the other those of the Chicago and Grand Trunk, and numerous sidings connecting with both roads run throughout the works. The Oliver Plow Works are now arranging to build a belt line of their own which will connect with the L. S. and M. S., the C. and G. T. and the Vandalia system.

The products of these works are sold in every State and Territory in the Union and in every civilized country of the world. The sales are effected by means of over 4000 agencies whose names appear on their books, and many of these have sub-agencies. In conducting so large a business the use of branch houses was found to be not only a great convenience but a necessity. As a result they have been established, and for years have been in successful operation at Indianapolis, Ind., Mansfield, Ohio, Rochester, N. Y., Harrisburg, Pa., St. Louis and Kansas City, Mo., Madison, Wis., Dallas, Texas, and San Francisco, Cal. All these branches carry heavy stocks, and salesmen travel from them the same as from the main offices.

James Oliver is president of the company, George Ford secretary and Joseph D. Oliver treasurer, and the president takes general management of the manufacturing portion of the business. The South Bend Iron Works for a time made plows, castings, thimble skeins for wagons, and did a general machine-shop business, but afterward all other business was dropped and the entire attention devoted to the manufacture of plows.

The Oliver chilled plow is James Oliver's own invention. Mr. Oliver saw that the demand of the farmer was for the plow that would have a mold board of hard finish; something was needed that should be much harder than iron and

cheaper than cast steel, and this desideratum was obtained by his inventions. After years of study and experiment he succeeded in so chilling the casting while in the flask that it was harder than any material ever before used for plows and at the same time free from holes or soft spots, smooth and perfect in its surface, and by a peculiar process of annealing was deprived of its extreme brittleness. The company sold more than 100,000 of these plows in 1890. Three times as many of the Oliver chilled plows are now being sold as of any other plow manufactured, and 1,200,000 of them are now in actual use. Besides the chilled plow, the Oliver works make steel plows quite extensively, so that their large assortment provides for every description and condition of soil or demand of the trade.

James Oliver was born August 28, 1823, at Roxburyshire, Scotland, and in 1835 was brought by his parents to Seneca County, New York. He removed with the family to Mishawaka, Ind., in 1836, and worked at various things as opportunity offered, until he determined to become a molder and went to work for the St. Joseph Iron Company. In 1855 he began the manufacture of plows at South Bend, and determined to invent and make a perfect plow. This he finally accomplished after years of experimenting, and the success he has attained is something of which his city, State and country may well be proud. Although nearing his three score years and ten he still is one of the active managers of the business which bears his name.

Weekly Pay Bill in Illinois.

The labor representatives in the Illinois Legislature have succeeded in their efforts to secure the passage of a weekly pay bill by corporations. It passed the State Senate some time since, and last week passed the House by the remarkable vote of 116 yeas to 1 nay. The sentiment in the House was so strongly in favor of it that it was taken up in advance of the regular order, under which it would not have been reached for weeks, and was passed without debate. The provisions of the bill are quite stringent, penalties being prescribed for its violation. A commendable feature, however, is that which gives employers six days to make up their wages accounts. Otherwise it would have been necessary to greatly increase the clerical force in order to meet its requirements. The measure awaits the signature of the Governor to become law, and it is hardly likely that this will be withheld in view of the support given to the bill in both branches of the Legislature. The following is the text of the bill:

Every manufacturing, mining, quarrying, lumbering, mercantile, railroad, surface, street, electric and elevated railway, steam railway (except steam surface railroads), steamboat, telegraph, telephone and municipal corporation, and every incorporated express company and water company, shall pay weekly each and every employee engaged in its business the wages earned by such employee to within six days of such payment. Provided, however, that if at any time of payment any employee shall be absent from his regular place of labor he shall be entitled to said payment at any time thereafter upon demand. Any corporation violating any of the provisions of this act shall be liable to a penalty not exceeding \$50 and not less than \$10 for each violation, to be paid to the people of the State, and which may be recovered in a court of record: Provided, an action for such violation is commenced within 30 days of the date thereof, and any person may bring an action in the name of the people of the State as plaintiff against any corporation which neglects to comply with the provisions of this act for a period of two weeks after having been notified in writing by such person that such action will be brought. On the trial of such action, such corporation shall not be allowed to set up any defense for a failure to pay weekly any employee engaged in its business the wages earned by such employee to within six days of the date of such payment,

other than a valid assignment of such wages or a valid set-off against the same or the absence of such employee from his regular place of labor at the time of payment or an actual tender to such employee at the time of payment of the wages so earned by him or a breach of contract by such employee, a denial of employment. No assignment of future wages payable weekly under the provisions of this act shall be valid if made to the corporation from whom such wages are to become due or to any person on behalf of such corporation, or if made or procured to be made to any person for the purpose of relieving such corporation from the obligations to pay weekly under the provisions of this act. Nor shall any of said corporations require any agreement from any employee to accept wages at other periods than as provided in Section 1 of this act, as a condition of employment. The penalties herein provided may be recovered in any court having civil jurisdiction by such in the name of the person bringing the same.

Uruguay's Commerce.

The Bureau of the American Republics has received returns of the foreign commerce of the republic of Uruguay for the year 1890. The imports compare with the previous year as follows:

	1889.	1890.
Wines and liquors.....	\$4,945,814	\$4,403,624
Food products.....	8,076,686	8,608,040
Tobacco and cigars.....	585,369	589,308
Dress goods and other		
fabrics.....	4,938,201	3,769,570
Ready-made clothing.....	1,742,814	1,534,735
Machinery and industrial material.....	8,466,058	9,436,394
All other articles.....	5,094,921	5,927,681
Totals.....	\$36,823,863	\$32,359,559

Although these tables show a decrease of nearly \$4,500,000, the returns are considered more favorable to the prosperity of the country than those of 1889, as during that year the boom of inflation was at its height. The imports of 1889 exceeded those of 1888 by \$7,500,000 and were double those of 1882. The imports for 1890 exceed those of 1888 by \$3,750,000, and those of all preceding years in proportion.

The exports of Uruguay for 1890 were \$29,085,518, an increase of \$3,181,411 over 1889. Meats were the principal export. The balance of trade, therefore, against Uruguay was \$3,274,034 in 1890, as compared with \$10,869,756 in 1889. During the year 24,117 immigrants arrived of whom 19,440 were from Europe. The total receipts from customs duties for the year were \$9,848,735, of which \$9,417,057 were collected at the port of Montevideo. Six hundred and forty-two thousand one hundred head of cattle were slaughtered in Uruguay during the year and 764,000 in the Argentine Republic during the same year, making a total of 1,406,100 for the cattle slaughtered in the River Plate republics.

The exports of wool from Buenos Ayres from October 1, 1890, to March 1, 1891, were 165,014 bales, against 101,196 bales during the corresponding period of the previous year. France, Belgium and Germany got nearly all of the wool, and that sent to the United States was only trifling.

The Gould Coupler Company are making arrangements for centralizing their business in Buffalo. The Gould Steam Forge at Black Rock is to be enlarged and its foundry facilities increased. The plans provide for a foundry 660 feet long and 80 feet wide, an annealing room 520 feet long and 80 feet wide, and shipping, tumbling and core rooms each 125 feet long and 80 feet wide. Arrangements will be made to put in a steel plant when it may be required. Much of the casting work which enters into the composition of the couplers is now done at Indianapolis, Ind., Toledo, Ohio, Erie, Pa., Lancaster, N. Y., Alliance, Ohio, and Sharon, Pa. The capacity with the above-named plants has been 400 couplers a day, but the new shops are expected to have a capacity of 600 a day.

The Farrel Foundry.

The foundry of the Farrel Foundry and Machine Company, at Ansonia, Conn., may be said to represent the most advanced ideas in foundry arrangement and practice. The building is 128 feet 8 inches in width by 301 feet 4 inches in length. The cross section is divided into a central portion 55 feet 6 inches, center to center of columns, with one wing 30 feet 2 inches and one wing 43 feet. The central portion is served by two hydraulic cranes, having a capacity of 50 tons each. Supporting these cranes are longitudinal lattice girders of 50 feet span, supported by cast-iron columns, which are thoroughly anchored to the masonry piers, which go down 15 feet into the ground.

Between each set of columns there are placed jib cranes which swing completely around, so that they control a portion of the floor surface between inside of the wings and outside ends of traveling cranes. Besides these jib cranes, in the wings, at different points, are placed other jib cranes to control the floor space in this part of the foundry. Every inch of the floor space of the foundry is therefore under the control of power, so that molten iron can be taken from the cupola and delivered to any part of the foundry by means of power, and finished castings can be delivered to the outside doors in the same way. The interior of the building is lighted by glass in the roof of the ventilator, the sides of the ventilator being made of iron louvres which open and close by hand. The accompanying engravings show clearly the construction of the building, which was erected by the Berlin Bridge Company of East Berlin, Conn.

San Francisco News.

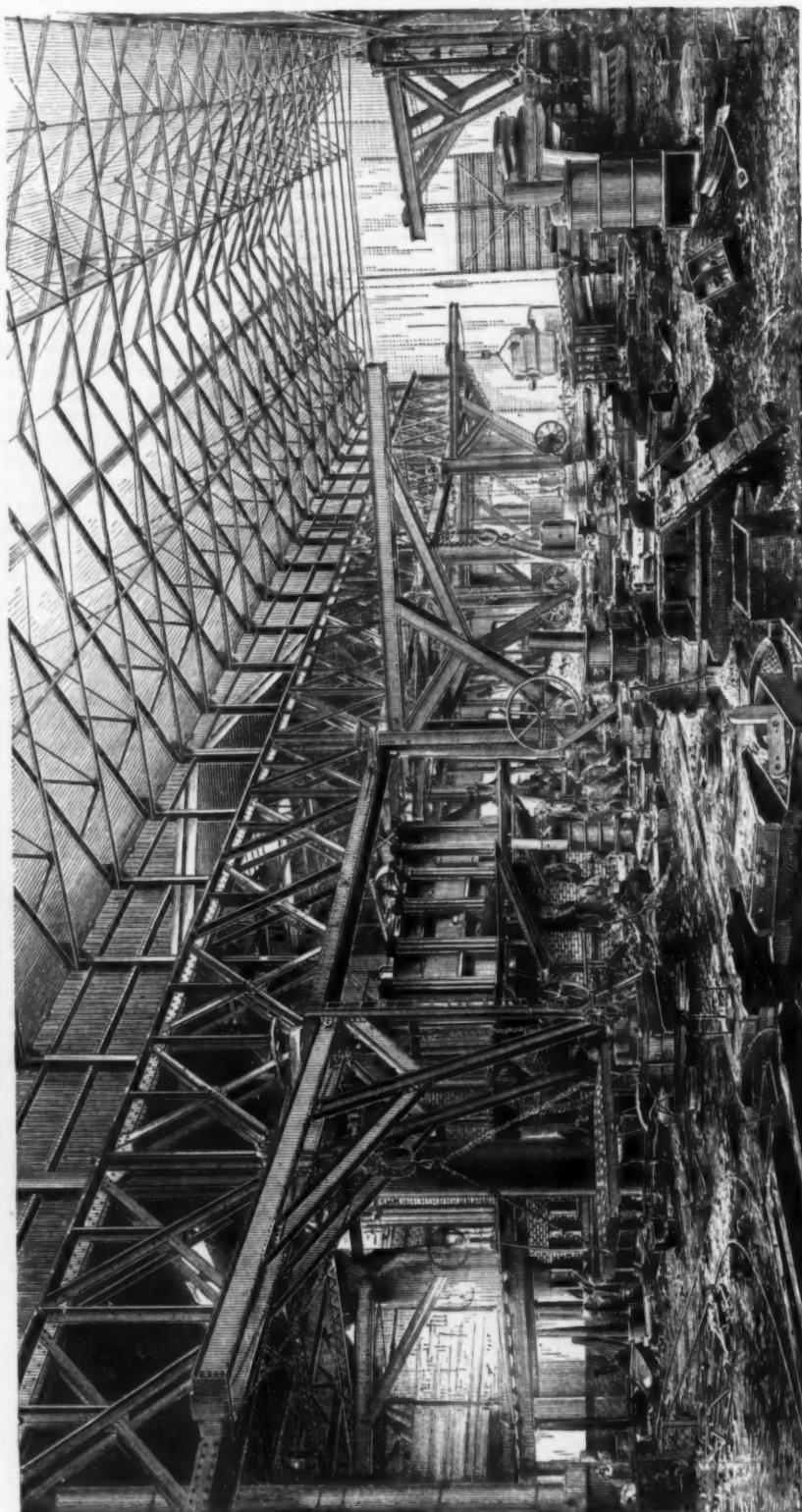
The Henry B. Hyde, the St. Frances and the E. B. Sutton came to hand during the week with 250 tons of Eastern pig iron, 3480 kegs of nails and a large quantity of merchant iron, steel, some steel rails and a large and extensive selection of general hardware. Our receipts by rail have been also liberal except in the matter of pig iron, which, of course, does not reach here in that way. Arrivals of agricultural implements have been liberal by rail and will be still more so. The season up to date has been, so far, the best that we have seen in years. We have had copious rains during the week and every one is full of hope, farmers, orchardists, vineyardists, miners and all rejoice, while the trade in the city are all anticipating a big business. This refers especially to the trade in hardware, merchant iron, steel, barbed wire and agricultural implements and in general every branch of the metal trade. As yet it may be said to be in anticipation principally, although sales in all lines have exceeded those of 1890 to even date. The season, however, was very bad a year ago, so that this was not much to be wondered at. Rail arrivals during the week include 21 carloads of iron, steel, hardware, machinery, stoves, agricultural implements, cables, wire, zinc, spelter, &c.

The strike against the use of non-union iron in buildings bids fair to assume unlooked for dimensions. The contractors have become alarmed and called a meeting to-day in which it was resolved to organize in view of the threatened strike. Among them was Oscar Lewis of the boycotted firm of O'Connell & Lewis. This proves that the builders intend to pool issues, and a good deal of trouble will follow; in fact, the manufacturers and others interested in industrial pursuits in this city have grown tired of the numerous strikes and boycotts, which have become alarmingly frequent of late. The manu-

facturers are organizing, and we are promised here a grand federation of manufacturers to offset the Federation of Labor. This would never have occurred were the trade unions of this city only reasonable prudent. But they have sown the wind and they are likely to reap the whirlwind. The iron men first began the resistance somewhat over a year ago, and

new molders were about to begin work on. All labor in this department has been suspended until a thorough search shall have been made. It is to be hoped that the rumor is not true. If it should be it shows to what lengths these men are prepared to go and how desperate they have become.

Pig iron is weak in this market, the gen-



now it looks as if the struggle would become well-nigh universal.

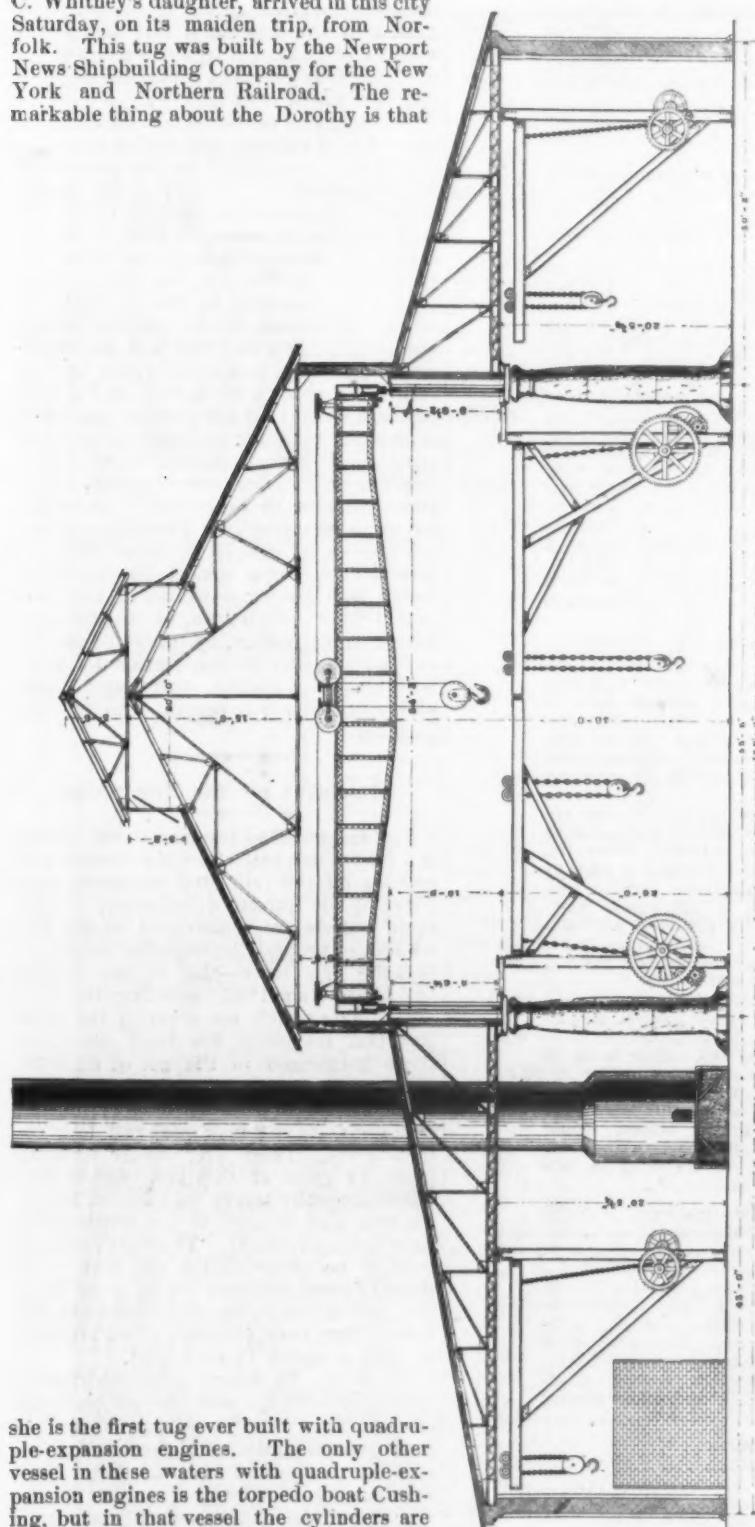
The building trades affected by the proposed boycott of non-union iron work have appointed a committee to take action. They do not propose to antagonize the men on questions of wages, &c., but they do insist on their right to employ whom they please. As I write comes a rumor of a plot by the molders lately in the employ of the rolling mills to destroy by means of dynamite a huge steel fly wheel which had been left in an incomplete state and which the

general quotation being \$25. Of course the troubles of the past year have helped to lessen the consumption and to affect the desirability of San Francisco as a market. The tin plate market is a little stronger, coke being quotable at \$6.62½ as against \$6.50 about a week ago. The Alaska canneries are laying in their supplies, the bark Coryphene carrying the material for 80,000 tins. The fruit crop is not yet past all danger from insect pests and the weather, but it promises to be large, in which case we will have a very large pack

and use up a great quantity of tin plate. Pig tin is a little stronger. It had weakened to $21\frac{1}{2}$ cents, but now is stronger, being quotable at $21\frac{1}{2}$ to $21\frac{1}{2}$ cents.

Quadruple-Expansion Engines for a Tug.

The tug Dorothy, named after W. C. Whitney's daughter, arrived in this city Saturday, on its maiden trip from Norfolk. This tug was built by the Newport News Shipbuilding Company for the New York and Northern Railroad. The remarkable thing about the Dorothy is that



CROSS SECTION OF FOUNDRY OF THE FARMER, FOUNDRY & MACHINE CO.

she is the first tug ever built with quadruple-expansion engines. The only other vessel in these waters with quadruple-expansion engines is the torpedo boat *Cushing*, but in that vessel the cylinders are placed fore and aft, while in the *Dorothy* they are built vertically, thus economizing a great deal of space, so much, in fact, that her engine and boiler take up less fore and aft space than those of the ordinary two-crank double compound type, not to say anything of the three-crank triple compound.

It is asserted for the Dorothy that her coal consumption is at least 30 per cent. below that of boats with double compound engines of the same power. In addition to this, her engines can be warmed up at the start more quickly than any of the lower types of steam engines of the same power, as the range of temperature in

her cylinders when at work is much greater than in the others.

The *Times* reports that the Dorothy was built from the specifications and under the superintendence of Horace See of this city. She is a staunch iron boat of the following dimensions: Length over all, 90 feet; beam molded, 19 feet; depth, 10 feet 9 inches. The deck house is of iron, fitted with round side lights throughout. The

inches stroke of piston. Steam at 180 pounds pressure is employed. The lower cylinders are bolted together and supported on one side by two columns, which are cast on the condenser, and on the other side by two wrought-iron columns fastened to the bed plate. The former columns also form the guides, which are of the slipper-slide variety, with water circulation through go ahead faces. The upper cylinders are bolted together, each one being supported on three columns secured to the lower cylinders. All of the cylinders are fitted with piston slide valves, operated by the See-Marshall valve gear reversed by steam gear from the upper platform. An independent centrifugal circulating pump supplies the condensing water. The air pump is driven from the after crosshead, as are also the feed and bilge pumps. There are also two independent vertical feed, fire and bilge pumps arranged either for feed, fire or bilge service. The propeller is a solid true screw of iron 7 feet in diameter. The boiler, built of steel, is of the cylindrical return tubular type, fitted with two corrugated furnaces leading into one combustion chamber. It is $9\frac{1}{2}$ feet in diameter by $10\frac{1}{2}$ feet long. The stack is hinged to enable it to be let down when passing under the Harlem River bridges. A large duplex pump is placed on the main deck with connections to the sides of the house to enable it to be used either for wrecking or fire purposes.

Reciprocity with Cuba.

In view of the negotiation of a reciprocity agreement with Spain, to be operative in her West Indian dependencies, the Department of State has just made public a schedule of import duties under the tariff of Cuba. The duties are exclusive of the 25 per cent. extra war subsidy and \$1 landing duty on each 1000 kg. gross weight of landed goods, except coals, and collected in Spanish gold with a deduction of only 5 per cent.

The following is the list for metals and manufactures thereof:

	Duty per 100 kg., except where otherwise stated.
Articles.	
Agricultural implements:	
Common classes, such as plows, shares, pickaxes, spades, hoes, rakes, harrows.....	\$2.10
Common knives, machetes or cut-lases:	
For chopping, with or without sheaths.....	Free.
For cutting cane.....	Free.
Of superior classes, such as Collins', which, though denominated as chopping, can be used for other purposes, and imitations.....	80.27
Plow shares, narrow hoes, spades for agricultural labor.....	Free.
Steam plows.....	Free.
Brass and manufactures:	
Yellow metal, Dutch gold, plates and sheets.....	\$10.95
Burnished, in wires, bars, rivets, nails, &c.....	13.05
Door knockers, bells of all sizes, beds, cradles, chairs, cocks, faucets, scales, sieves, hinges and other similar articles, including adhering iron and wooden parts.....	15.40
Hasps, rings, jingle bells, curtain headings, buttons, locks and padlocks, spittoons, clothes-racks, bolts, tubing, pins, hooks and eyes, and other similar articles, although combined with iron.....	26.40
Bridle curbs, lock escutcheons, beer pumps, dog collars, lamps of all sizes and classes, patent pulleys, table springs, thimbles and other similar articles, though combined with iron or steel.....	Per kg. .48
Copper and copper wares, same as for brass.	

Iron and manufactures :	
Cast and in pigs.....	.26 1-10
Portable stoves, plates, boilers, furnaces, doors and hatches, caldrons, tubes and similar articles.....	1.55
Forged, tinned, enameled and galvanized or not, in pans, coffee-pots, skillets, colanders, buckets, ladles, skimmers, cooking and chamber pots, wash basins, fish kettles, frying pans, roasting cylinders, and all other articles of analogous sorts.	4.20
Cast, in hinges, balls, balconies, cooking stoves, columns, water tanks, staircases, and other similar objects for building : also, sarcophagi, garden chairs and sofas, and other articles of the same kind.....	2.10
Forged, in same articles mentioned above and tubes.....	3.15
Cast and forged nails.....	3.00
Anvils and other similar articles ..	2.10
Copying hand presses.....	Per kg.
Forged, in rods and bars, railings, trunnels, hoops, plates for tanks, clarifiers, roofs, floorings, platforms, and other similar objects. Galvanized, in articles of above item5 2-5
Plates cut for sugar molds.....	3.15
Forged locks, padlocks, bolts, though containing small parts of yellow metal.....	.35
Forged and cast, in common horse, stiff, and snaffle bits, spurs, stirrups, unpolished, and with or without any small ordinary metal plates.....	7.30
Same articles as above, polished, bronzed, gilt, silvered or plated.	15.65
Hooks and eyes, handles, knockers, rings, with or without screw and bolt, large fish hooks, screws of all sorts of more than 3 inches long, harpoons, door bolts and hinges, horseshoes, latches, pulleys, carriage builders' and saddlers' lynchpins, hurdle rings, steps, hooks, buckles, springs, screws and bolts, braces, and all similar articles	3.15
Same as above, bronzed, silvered, gilt and plated :	
Common classes	13.05
Superior classes.....	Per kg.
Chains :	
Up to $\frac{1}{4}$ -inch links.....per kg.	.04 7-10
More than $\frac{1}{4}$ -inch links.....	2.60
Waiters and trays, cash, paper and jewelry boxes and other similar articles not otherwise specified.....ad valorem.	29 %
Fish hooks.....Per kg.	\$0.26 2-5
Beds, cots and cradles:	
With or without metal ornaments, columns included.....Per kg.	5.20
Plated and in imitation of copper will pay as above, with 100 per cent. extra.	
Sieves and rat traps with wire cage, wooden parts included.Per kg.	.07 3-10
Dish covers, net food safes. Per kg.	.22 1-10
Spice and coffee handmills:	
With wooden or iron box.Per kg.	.09 3-5
Immovable, with or without fly-wheels, for grinding coffee, and corn shellers.....	4.80
Wire netting.....	4.70
Screws for hinges and other purposes, up to 3 inches long	7.30
Hair pins:	
Varnished or not.....Per kg.	.04 4-5
With or without steel point and unvarnished.....Per kg.	.17 4-5
Pack needles, larding pins, skewers, punches and awls36 3-10
Shoemakers' leather cutters. Per kg.	.24 7-10
Thimbles.....Per kg.	.21 4-5
Canvas and common sewing needles:	
German.....Per kg.	.72 $\frac{1}{2}$
British.....Per kg.	4.35
Steel pens.....Per kg.	1.81 3-10
Watch chains, keg rings, and all other small steel or polished iron not specified.....ad valorem.	29 %
Tools of a common class applicable to agriculture and other trades.....	\$2.10
Hammers for carpenters, coopers, masons, shoemakers, tongs, shovels, cold chisels, coopers' punches and other similar.....	5.65
Knives for carpenters, coopers and tanners, common planes, jack, smoothing, rabbet and round jointers and other similar wooden parts included.....Per kg.	.08 3 10
Chisels of all classes, angers, compasses, sickles, nippers, pliers, screw drivers, hollow punches, saw sets, hand vises, squares,	
flame, corking tools, loose blades for planes and similar tools.....	Per kg.
Carving and table knives, with or without forks:	
With bone, horn, whalebone, iron or wooden handle.....	18
With ivory, tortoise, mother-of-pearl and plated or gilt handle. Per kg.60
Penknives and razors, ad valorem.....	29 %
Hand saws of all classes, circular and vertical, for mills.Per kg.	.22 4-5
Saws, with or without frames and pits.....	.10 4-5
Screw augers without handle, trunnel drivers, and common augers with wooden handle. Per kg.12
Carpenters' breast bits, with and without augers, and loose augers for same.....Per kg.	.33 1-10
Screw plates of all sizes, including tinsmiths' stationary.....Per kg.	.13 1-10
Wrought iron.Per kg.	.48
Scissors—Steel and burnished, assorted :	
Common classes.....Per kg.	2.52 1-5
Superior.....Per kg.	4.41 3-10
Tailors and gardeners' ..Per kg.	1.04 1-10
For shearing animals, &c. Per kg.	.30
Knives for chopping wood :	
Belgian and German, of three grooves, with or without sheaths and other similar classes.....Per kg.	.07 1-5
Of superior classes ..Per kg.	.12
Tools of general use, as hatchets, axes, adzes, trowels and other of like sorts.Per kg.	.10 4-5
Arms, fire and steel, of all kinds, ad valorem,	29 %
Scales, steelyards, and all such classes.....ad valorem,	24 %
Rails for railroads, public and private.....ad valorem,	4 %
Machinery:	
Steam, hydraulic, electric and all other engines, motors, implements, apparatus and machines for whatever purpose and of whatever materials, manometers, well pumps, sewing machines, windmill, gasometers and all accessory pieces for same, ad valorem.	8 %
All complete machinery and apparatus exclusively applicable to the sugar industry, from the cartage and grinding of cane to the manufacture, packing and extraction of the sugar, when imported by planters, ad valorem	1 %
Extra pieces for same will pay 8 %.	
Steel and steel ware:	
Plates and bars.....	84.20
Pieces for watch makers, ad valorem.....	8 %
Files, rasps, and other tools of similar classes	Per kg \$0.12
The above duties will be levied only on articles manufactured of pure steel ; on others, where steel is combined with iron, they will be collected on the latter metal.	
Tin and tin-plate goods:	
Pigs, bars and sheets.....	10.45
Plates.....	3.65
Oil cans and cruets, candlesticks, sugar dishes, cooking pans, coffee, milk and chocolate pots, snuffers, funnels, spittoons, jars, bathtubs, cake molds, plates, pitchers, dishes, lamp reflectors, spoons, skimmers, ladles, and other similar articles.....	13.05
Zinc and calamine:	
Nails.....	5.20
Pigs.....	2.60
Plates or sheets.....	3.49
Lamps of all sizes or shapes, polished and bronzed.....	22.80
Printing types.....	22.80

Two nickel steel plates which are to be put to a practical test as armor have been received at the Navy Yard in Washington, from whence they will be taken to the proving ground at Indian Head, Md., and placed in position for the test. These are the first American plates made, and the test is looked forward to with much interest by naval experts. The plates are 8 feet long, 6 feet wide and 3 inches in thickness.

Amending the Conspiracy Laws.

Allegations of conspiracy, when brought before the courts, have resulted in conviction of late in quite a number of instances. Combinations to extort money and to prevent obnoxious persons from working have been not infrequent, thwarting the unionists in their purposes when the fact was proved. To mitigate the rigors of the law in this State an amendment to the conspiracy section of the penal code was passed in the Assembly, 16th inst., by a vote of 74 to 31. It legalizes many of the methods of boycotting. The language of the amendment is as follows :

"Orderly and peaceable assembling or co-operation of persons employed in any calling, trade or handicraft for the purpose of securing or aiding other persons so employed in securing an advance in the rate of wages or compensation, or more favorable conditions of employment in any other respect, or of maintaining or aiding other persons so employed in maintaining such rate or conditions, or of obtaining or aiding other persons so employed in obtaining the redress of any grievance against employers, is not a conspiracy, and it shall not be unlawful for any persons employed in any calling, trade or handicraft for the purpose of such co-operation, to unite, combine or bind themselves by oath, agreement, alliance or otherwise to persuade, advise or encourage, by peaceable means, any person or persons to enter into any combination, for or against, leaving or entering into the employment of any persons, firm or corporation, or to persuade, advise or encourage, by peaceable means, any person, firm or corporation to withhold his or its custom, patronage or employment from any person, firm or corporation."

Armament for the New Ships.

The armament of the new naval vessels is a formidable collection of ordnance as it appears on the tabulated statement prepared by the Bureau of Ordnance. Forty-three vessels are represented in the list, which can properly be regarded as including the new navy—that is, the vessels authorized since 1888, including the Chicago. The vessels upon which the most powerful armament has been placed are those authorized in the act of June 30, 1890, which provided for three battle ships, each with main batteries of four 6-inch guns, eight 8-inch guns and four 13-inch guns. There are, under existing plans, 12 guns of this last caliber, distributed equally among the Indiana, Massachusetts and Oregon, as the battle ships have been christened. There are 75 4-inch guns to be provided for, the first to be placed on the gunboats building at Bath, Me., and others going on the monitors, the cruiser New York, the triple-screw cruisers, on each of which 12 are placed.

There are 54 5-inch guns, distributed among the Chicago and the uncompleted cruisers No. 6 to 11 inclusive. There is a more general allotment of the 6-inch guns, of which there are to be 128, the largest number of guns of any one caliber in the main batteries. There are 50 8-inch guns and 22 10 inch weapons. Of the 8 12-inch guns, four will be placed on the Puritan, and two each on the Texas and Monterey. The secondary batteries are heavier numerically than the main batteries and are more generally distributed, the only vessels without the secondary batteries being those of the training squadron and torpedo boat No. 2, which does not have a main battery either. There are 228 6-pounders, 47 3-pounders, 99 1-pounders, 12 47-caliber and 49 37-caliber guns and 97 45-caliber machine guns. There are, according to the present project, 142 torpedo tubes attached to 27 vessels, and

190 auto-mobile torpedoes attached to 25 vessels. The Vesuvius is distinguished among her fellows by having 3 guns in her secondary battery and 3 15-inch dynamite guns.

The Worthington Direct-Acting Steam Engine.

A vertically arranged duplex engine has been especially designed by Charles C.

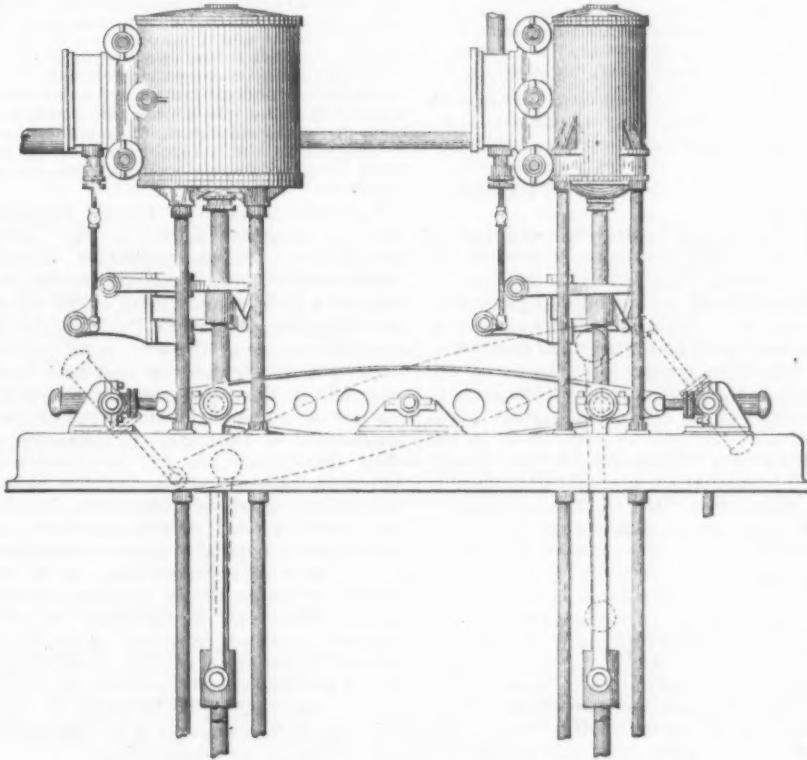


Fig. 1.—Side Elevation of Direct-Acting Steam Engine.

Worthington to permit of the use of steam expansively, and also to secure the balancing of the parts so that the available power exerted by the steam pistons will be substantially the same upon the up and down strokes.

As shown in the drawings, the engine consists of two high and two low pressure steam cylinders arranged, a high and a low, side by side in vertical position and being connected so as to use the steam upon the compound principle, as shown in Fig. 3. The cylinders are provided with induction and exhaust valves of ordinary construction, and the piston rods are provided with the usual connections by which the valve of each cylinder is operated from the piston rod of the other in the manner common in duplex engines. The steam enters the high-pressure cylinders, then passes to the low-pressure cylinders and then to the condensers or to the atmosphere, as in the ordinary compound engine. The piston rods of each cylinder are provided with the usual connections by which the valves are operated. In those cases where the pistons of the two cylinders forming the compound engine act upon the same rod, the valves of the two cylinders are, of course, arranged so that the steam acts upon the pistons in the same direction at the same time. In this engine, however, the valves of the two cylinders forming each side are so arranged that the steam acts upon their pistons in opposite directions—that is to say, the construction is such that when the steam is acting upon the upper side of the piston of one high pressure cylinder to drive it downward the exhaust steam from that cylinder is acting upon the under side of the piston of the low-pressure cylinder upon the same side of the engine to drive it upward.

the beams which project beyond the piston rods are provided with bearings which receive heads formed upon the ends

with relation to the beams as to offer a gradually decreasing resistance to the pistons of the main cylinders during the first part of their strokes and a gradually increasing assistance during the last part of their strokes.

In describing the operation it will be assumed that the piston of the left-hand cylinder, Fig. 1, has completed its downward stroke and the other its up stroke, thereby bringing the compensating cylinders and the beam to the position indicated by the dotted lines. It will be observed that when the beam is in this position the angle of the rods of the compensating cylinders with relation to the beam is such as to resist the downward movement of the right-hand piston and the upward movement of the other. During the first part of the strokes of the pistons the power developed by the steam against their pistons will therefore be resisted by the power developed in the compensating cylinders; but as the pistons of the main steam cylinders proceed upon their strokes this resistance will, owing to the constantly changing angle at which the piston rods of the compensating cylinders act upon the beam, be gradually reduced until the pistons of the cylinders arrive at the middle of their strokes, as indicated by the full lines in Fig. 1, at which time the piston rods of the compensating cylinders will be brought into line and will therefore oppose each other, but offer no resistance to the pistons of the main steam cylinders. During the last part of the stroke of the pistons of the main steam cylinders the operation will be reversed and the pistons of the compensating cylinders will offer a gradually increasing assistance to the main steam pistons. The operation of the compensating cylinders in connection with the steam cylinders forming the opposite side of the engine will, of course, be exactly the same. This operation of the compensating cylinders permits the admission of steam to the cylinders, to be cut off after the pistons of those cylinders have completed part of their stroke, thus allowing the remainder of the stroke to be made by the expansive force of the steam

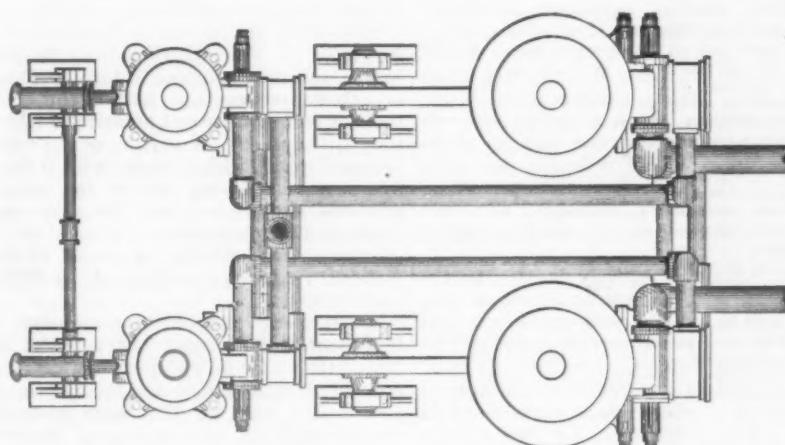


Fig. 2.—Plan View of Direct-Acting Steam Engine.

of the piston rods of two pairs of oscillating compensating cylinders which are provided with trunnions supported in suitable bearings upon the frame work, as

in the cylinders aided by the power exerted by the compensating cylinders.

It now becomes apparent that when the resistance or work to be done does not

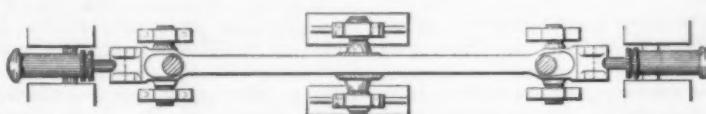


Fig. 3.—Sectional Plan Through One Beam.

shown in Figs. 1 and 2. These cylinders are supplied with a motor fluid under suitable pressure, and are so arranged

vary during the entire length of the stroke, as would be the case if the engine were operating a direct-acting pump, all the

benefits to be derived from the use of steam expansively and of the compound principle can be obtained. When the steam enters the cylinder, and is at a maximum pressure, then the most work is to be done, owing to the position of the compensating cylinders; but as it is cut off and used expansively the work to be done gradually decreases, owing to the changing position of the compensating cylinders.

NEW PUBLICATIONS.

FIRST ANNUAL REPORT OF THE GEOLOGICAL SURVEY OF OHIO. (Third organization.) By Edward Orton, State Geologist. Published by authority of the Legislature, Columbus, Ohio: The Westbore Company, 1890; large 8vo; 323 pages; illustrations and two geological maps.

This unpretentious volume has special value among the annual reports of State geologists. As the first report of the third organization of the Geological Survey of Ohio, it indicates the great efficiency of their investigations into the resources to which Ohio owes its great prosperity. Prof. Edward Orton has here presented the results of a thoroughly scientific observation of the production of oil and gas, continued for many years at lavish cost to corporations and individuals, and a clear and intelligent discussion of their origin. The earth's crust has been bored so deeply and in such diverse localities in Ohio and Pennsylvania that the constitution and qualities of the geological strata have been photographed upon this careful observer's mind. In the cabinet of the University of Ohio Prof. Orton has collected a great array of the various oil and gas producing rocks and shales in their natural orders. These, with the data of borings and wells diligently gathered, with a complete history of their production, constitute the material with which he has tested the theories advanced concerning the origin and supply of these great factors in the manufacturing problems of our nation. In the face of great corporate abuses and local enterprises which have most selfishly wasted this energy, and in legitimate criticism of their arrogantly asserted rights to these treasures stored for the people of other generations, as well as this, this State Geologist calmly discusses the theories upon which they justify their robbery of the commonwealth. Such scientific and official fidelity commands the respect of intelligent men whose attention has been called to the difficult matters pertaining to this immensely valuable economic force, whose great value is really a modern discovery.

This volume is entirely devoted to the treatment of petroleum and natural gas. Their rise to a direct and equal competition with coal as a source of power is comprehensively treated. The use of bituminous products in the forms of asphalt, mineral pitch, slime oil and gas is traced to early human history. Yet the ancients did not dream of their value and extent in nature, or attempt to account for their origin in the depths of the earth. Natural gas was used in China 2000 years ago for the evaporation of brine, in the drilling for which it was discovered by that nation. Japan has used petroleum for 1000 years, and India and Persia have utilized natural gas from the time of the sixth century. The petroleum springs in Italy and Galicia in still earlier times furnished those peoples light and heat.

The chemical constitution of these bituminous products is accepted by all modern theories which attempt to account for their origin. They are hydrocarbons, containing generally 85 per cent. of carbon and 13 per cent. of hydrogen, with small varying percentages of oxygen, nitrogen and sulphur. They are minutely distrib-

uted in all unaltered strata, from the Paleozoic age to the present time and in all parts of the earth, and yet their accumulations are rare.

There are two classes of theories to account for their origin, distinguished as the chemical and geological theories. Two chemical theories are lucidly presented in this report—Berthelot's, a French chemist, and one of an equally distinguished Russian, Dr. Mendeljeff.

Berthelot's theory, published in 1866, accounted for all natural hydrocarbons by the action of chemical force on inorganic matter. From the assumed existence of alkali metals, potassium and sodium in a free state and at high temperature in the interior of the earth, coming into contact with surface water carrying carbonic acid in solution, chemical reactions would easily generate some of the hydrocarbon series. This is regarded as a highly improbable hypothesis.

Dr. Mendeljeff's theory, published in 1877, holds that petroleum is never of organic origin, but purely a product of chemical affinity acting on inorganic substances, as a vein stone or an ore. It negatively combats the origin of petroleum, like coal, from organic substances on the surface of the earth or from coal deposits in the depths of the earth, and ascribes its accumulation to fissures and folds in the earth's strata. From the La Place theory of the formation of the planetary system the deduction is made of the accumulation of the most dense elements in the center of the earth, like iron, and of hydrogen, nitrogen, carbon and other lighter gaseous elements nearer the surface. So, if carbon, oxygen and iron in the cooling of the earth were associated, and carbon in excess, the greater part of the carbon would escape in the gaseous state and the remaining part unite with iron, while oxygen would more readily unite with silicon and calcium. Carbides of iron and other metals in fluid forms are assumed to be beneath the crust of the earth, which is very thin as compared with the body of the earth. Through the cooling of the interior a mountain range is protruded into the crust, and fissures made by which surface waters come in contact with the heated metallic carbides. Oxides are formed with the carbides; hydrogen set free from the water; carbon from the carbides; and they combine to form naphtha or other hydrocarbons within the wide limit of temperature and pressure to which they are exposed. A portion of the water becomes steam, which carries with it these hydrocarbon vapors, which in various mixtures are infused into the rocks and condensed into mineral oils, mineral pitch, ozokerite and similar products having different relative proportions of hydrogen and carbon.

A searching and effective criticism of this theory by Prof. Orton, from the facts with which he is abundantly fortified, points out its weakness and inconsistency, and makes way for the more favorable consideration of the geological theories which derive petroleum and kindred products from organic sources, either vegetable or animal, or both. Among the advocates of these there is great difference of opinion. To algal vegetation, or sea weeds, peat beds, land plants or coal they are variously ascribed, or to different animal tribes of early ages. Diverse methods of transformation also are claimed, some by chemical decomposition or decay, others by destructive distillation; or still again by both processes blended in an indefinite process called spontaneous distillation.

The theory of Dr. J. S. Newberry, professor of geology in Columbia College, New York, is stated with considerable commendation, since from his former position as State Geologist of Ohio he had ample opportunity to construct a credible explanation agreeing with the most favor-

able conditions of observation. Dr. Newberry is thus quoted:

The precise process by which petroleum is evolved from the carbonaceous matter contained in the rocks which furnish it is not yet fully known, because we cannot in ordinary circumstances inspect it. We may fairly infer, however, that it is a distillation, though generally performed at a low temperature.

The origin of the two hydrocarbons (petroleum and gas) is the same, and they are evolved simultaneously by the spontaneous distillation of carbonaceous rocks.

We have in the Huron shale a vast repository of solid hydrocarbonaceous matter which may be made to yield 10 to 20 gallons of oil to the ton by artificial distillation. Like all other organic matter this is constantly undergoing spontaneous distillation, except where hermetically sealed deep under rock and water. This results in the formation of oil and gas, closely resembling those which we make artificially from the same substance, the manufactured differing from the natural products only because we cannot imitate accurately the process of nature.

Professor Newberry's theory supposes that the vegetable matter of the shales derived from marine vegetation is that which undergoes this spontaneous distillation, by which he must mean either decay or combustion. But while Prof. Orton regards it as one of the most lucid and attractive of all the theories that have been proposed, it does not account for (1) all absence of evidence in the rocks of temperatures of at least 200° F. necessary to effect distillation, nor (2) for absence of the carbonaceous residue in the shales which the process of destructive distillation would render strictly necessary, as where heat is applied to organic substances in a close vessel from which air is excluded, by which liquid products are obtained. There are in the Ohio rocks no siliceous sheets which should be produced through the solution of silica in the presence of alkaline chlorides which the rocks contain, and there is no evidence of coke from the distillations, even if they could take place at a low temperature.

Professor Newberry's theory is accepted by Prof. S. F. Peckham in the United States Census Reports for 1880, and he attempts to account for the supply of heat necessary to the destructive distillation through the effect of the elevation of the Appalachian border of the continent. This heat action to which petroleum is due must have taken place far below the unaltered rocks in which it is now found. There would be sought, therefore, the carbonaceous residue. Newberry's theory considers the process of formation a constant one. Peckham's explanation refers it to the time of the Appalachian upheaval, or subsequent to it. It is a theory not easily tenable, because there is no sign of metamorphic action in these rocks, and the deep-lying shales which make the reservoirs of petroleum would not allow the petroleum to come through them from far lower depths.

Dr. T. Sterry Hunt has forcibly presented another theory which coincides with the foregoing, except that he ascribes the production of oil and gas not to a secondary transformation of organic matter by destructive distillation, but to a primary decomposition. As stated by Prof. Orton, this theory holds "that the remains of living bodies, animal and vegetable, pass, under appropriate circumstances, directly into petroleum. In other words, the bituminous decomposition must be added to the ordinary decay of organic bodies. The facts to which this theory appeals are comparatively few, and as at present stated they lack the full authority necessary to establish so novel a doctrine, but some of them seem to carry great weight. If careful investigation shall hereafter show them to be thoroughly founded, the problem of petroleum production can be considered solved. According to this view petroleum mainly originates in and is derived from limestones. When found in limestones he counts the oil indigenous, but when found

elsewhere, as in sandstones and conglomerates, he counts it adventitious, and he then refers it to underlying limestones."

Dr. Hunt is thus quoted in speaking of the oil fields of Canada:

The facts observed in this locality appear to show that the petroleum, or the substance which has given rise to it, was deposited in the bed in which it is now found at the formation of the rock. We may suppose in these oil-bearing beds an accumulation of organic matters, whose decomposition in the midst of a marine calcareous deposit has resulted in their complete transformation into petroleum, which has found a lodgment in the cavities of the shells and corals immediately near. Its absence from the unfilled cells of corals in the adjacent and interstratified beds forbids the idea of the introduction of the oil into these strata either by distillation or by infiltration. The same observations apply to the Trenton limestone, and if it shall be hereafter shown that the source of petroleum (as distinguished from asphalt) in other regions is to be found in marine fossiliferous limestones, a step will have been made toward a knowledge of the chemical conditions necessary to its formation.

Again, he says:

In opposition to the generally received view, which supposes the oil to originate from a slow destructive distillation of the black pyroschists belonging to the middle and upper Devonian I have maintained that it exists, ready formed, in the limestones below.

This statement seems to recognize the possibility of the transfer of petroleum from its sources to reservoirs in associated strata.

Again, after describing the occurrence of petroleum in certain fossils and certain layers of the corniferous limestone, he says:

The facts observed in this locality appear to show that the petroleum, or the substance that has given rise to it, was deposited in the bed in which it is now found at the formation of the rock.

Finally, in referring to bitumen-bearing dolomite in the Niagara series near Chicago, he says:

With such sources ready formed in the earth's crust, it seems to me, to say the least, unphilosophical to search elsewhere for the origin of petroleum, and to suppose it to be derived by some unexplained process from rocks which are destitute of the substance.

In this passage also a possible transfer of petroleum seems to be recognized. These statements leave nothing to be desired as to clearness and explicitness. The author's view could not well be put into more concise terms than he has used. It must be added, however, that he has sometimes described the oil of Pennsylvania and Ohio as indigenous to the Devonian and carboniferous sandstones which contain it.

It is not necessary in Professor Orton's view to restrict the production of oil to limestones, or to the time of the formation of the rock in which the organic matter was contained, for vegetable substances remain unchanged in the earth for long periods, nor will the denial be accepted that except in rare instances the so-called bituminous shales contain any petroleum or other form of bitumen, for Ohio shale contains both oil and gas, as does also its limestone series. This is abundantly illustrated from borings in Ohio, Kentucky, New York and also in Central America, and in the region of the Orinoco River, in South America, and upon the southern and western shores of the Gulf of Mexico.

The essential point of Dr. Hunt's theory of the origin of petroleum is, however, that it results from the primary decomposition of organic substances. It is effectively applied by Professor Orton to the explanation of the origin of petroleum of Eastern Ohio and Pennsylvania. He thus traces some of the steps of the history of its production.

The shales which constitute its chief source were accumulated in a tropical sea. The Devonian limestone, which immediately preceded them in time, bears witness to most genial conditions of climate. Its massive corals required at least as high an annual temperature as is found in any part of the Gulf of Mexico to-day.

The sedimentary deposits that were laid down on the floor of this Devonian sea con-

sisted of clay and sand with occasional gravel bars, the sources of which must be sought in the rising Atlantic border or in the Canadian highlands, as is proved by all the deposits thickening and growing coarser in those directions. To the western limit of this sea, along the shores of the emerging Cincinnati axis, only fine clay was borne, and this fine and homogeneous material accumulated very slowly, 1 foot requiring as much time as 10 or 12 feet of the coarser and more varied series to the eastward.

In these seas, as we know, there was a vast development of marine vegetation. Some plants of rhizocarpean affinities were especially abundant and their resinous spores and spore cases, which constituted by far the most durable portions of the plants, were set free in enormous quantities. Even now, in some parts of the series, these spores constitute a notable percentage of the shale. In structure and composition they are but little changed from their original condition. Other portions of this and like vegetation may have been carried to the sea floor in a macerated condition and have there passed through the coaly transformation, resulting in the structureless, carbonaceous matter that constantly characterizes the black shales. This carbonaceous substance can still be made to yield the members of the bitumen series through the agency of destructive distillation, and, doubtless, so also can the spores that remain unaltered in the shales, both leaving a carbon residue thereafter.

The shales that were slowly accumulating on the floor of this tropical gulf, thus charged with vegetable remains, must have behaved as similar shales do around the border of the present gulf. The vegetable matter was turned into petroleum, as it is in Trinidad and the West Indies now. The petroleum would have been absorbed by the particles of clay in contact with which it was originated, or if liberated in the water it would there have been laid hold of by like floating particles of clay, to be carried with them in due time to the sea floor, and the work would have gone on until the material was exhausted or the requisite conditions were lost.

The resulting stratum of bituminous shale would have been much more highly charged with petroleum than any portion of these shales is at the present time. Over it at last a bed of sandstone is deposited, which in turn is roofed in by another bed of fine-grained shale. The pores of the sandstone are occupied by sea water, but a slow system of exchanges would be established between the rocks by which at last the petroleum would be gathered into its final reservoir. The presence of petroleum in considerable amount in a shale might give it a measure of permeability.

Such would appear to be some of the steps in the production of petroleum if Hunt's view of its origin by the primary decomposition of organic tissue is adopted. The result would correspond fairly well with that of the "spontaneous distillation" theory already discussed. Both would find petroleum distributed through the substance of the shales, and both would expect its constant escape from outcrops of shale or sandstone. Continuous origination is by no means a necessary conclusion from continuous outflow.

The advantage that the present theory has over others is that it seems to find more support in the processes of nature at the present time. We find the bitumen series in actual process of formation in many parts of the world to-day, and, as some good observers hold, resulting from the primary decomposition of organic matter under normal conditions. On the other hand, we do not find this series in any cases which are open to observation and subject to measurement, resulting from the secondary decomposition of carbonaceous matter contained in the rocks, unless the comparatively high temperatures of destructive distillation are reached.

Of all the theoretical explanations of the origin of petroleum only one, which is the discarded chemical theory, holds out any hope of a perennial supply. "The reservoirs hold all the oil and gas that they ever will hold," says this report, "and when once exhausted they will never be replenished."

Petroleum is widely distributed, but in its diffused state, though enormous in quantity, it is, like much other generally distributed mineral wealth, of but little value.

The topics of reservoir, cover, structure and rock pressure are treated in the report with much discrimination and practical illustration from numerous borings into different strata, and the following important inferences made at the close of the discussion:

1. There is no danger that the great gas res-

ervoirs of to-day will "cave in" or "blow up" after the gas is withdrawn from them. The gas will never leave the porous rock in which it has been stored until it is obliged to leave by the pressure of the water that is behind it. The last end of a gas rock is a water rock or an oil rock. Considerable uneasiness has been caused in the minds of even reasonably well-informed persons by the sensational articles that have appeared from time to time in the newspaper, predicting the subsidence of extensive areas from under which the gas has been withdrawn, or explosions resulting from admixture of air and gas as the latter is diminished in the reservoirs. The so-called science on which these predictions are based is of the spurious sort, and the authors of these predictions have been speculating in regard to subjects of which they had no adequate knowledge. There is not the shadow of a shade of danger in sight in these directions.

2. This doctrine lays the axe at the root of all the optimistic theories that blossom out in every district where natural gas is discovered, and especially among the real estate speculators of each new field, to the effect that nature will not fail to perpetually maintain or perpetually renew the supplies which we find so delightfully adapted to our comfort and service. Profound opinions of this sort, coming from such sources, have constituted a large part of our newspaper literature on these subjects hitherto, but the logic of events is rendering these claims more and more untenable each day, and they are blind, indeed, who now pretend to see any promise of an unfading supply.

3. Unwelcome though it may be, this doctrine ought to be kept clearly and constantly before the communities that have begun to enjoy the inestimable advantages of the new fuel. If they believe that the supply is indefinitely great or that it is being constantly renewed, they can scarcely be brought to employ any proper economy in its use, but just as far as they accept the demonstrated limitation of the supply, they will be ready to adopt all proper measures for husbanding the stock to which they have obtained access. The doctrine has also an important bearing on the question as to what uses natural gas should be put. Manufacturing establishments of any sort that consume a million or more feet in a day cannot be greatly multiplied in any Ohio field without rendering a tolerably speedy exhaustion of the supply a certainty.

4. When the salt water takes possession of a former gas rock it comes to stay. A permanent equilibrium is established by its advent in the place of the unstable equilibrium which prevailed so long as the gas remained imprisoned in the arches of the rock. The "rest" which it is sometimes proposed to grant to an overworked and prematurely exhausted gas field will be a long one. Nothing but small and short-lived accumulations can ever be found in it again.

5. Of the original rock pressure of any field not all can be counted available for the supply of the pipes that are to carry the gas away. There is a large fraction that must always be left upon the well, if the best results of production are expected. This is called a "back pressure." The amounts and the proportions required vary in different fields, but in Northern Ohio it is seldom safe to reduce the pressure below one-third of its original figure. If, for example, the gas showed 450 pounds pressure at first, it should never be allowed to flow with less than 150 pounds on the well. In other words, only the surplus of gas above 150 pounds belongs to the line. As the energy of the field decreases, which is shown in the diminution of the rock pressure, the amount of back pressure to maintain the protection of the gas must be increased, which is the same as saying that the available amount of gas is constantly decreasing. Nothing is so destructive of a gas field as to allow the wells to run "wide open" or without back pressure. Such a course is always an invitation and a persuasion to the oil and water by which the gas is surrounded to come up higher, and the invitation is always accepted. In the case of rival corporations occupying the same field, it sometimes happens that it seems to the interest of one to exhaust the field as rapidly as possible. To accomplish this but two things are necessary—first, to drill a good many wells, and secondly, to allow them to flow with the gates opened full.

The history of the Trenton limestone as a source of oil and gas occupies another important part of this report. It gives a review of the several gas fields in the order of their discovery and development. It shows an intimate acquaintance with operations in Ohio and of the oil production in Pennsylvania, New York and West Virginia. The discovery of gas at Findlay, Ohio, its production, the extraordinary development of industries and conse-

quent rise in value of that and surrounding localities, and the causes of failure of gas at Findlay and elsewhere, are presented with most commendable fidelity and independence of the local and corporation interests which have allowed enormous wastes of natural supplies of power.

The report contains a chapter of great value on the various uses to which natural gas in Ohio is applied, and the localities which are greatly benefited by this new source of heat and power. The conclusions drawn are that its highest and most valuable use is for domestic fuel; that an advance in its price for the uses of municipal corporations is imperatively demanded; that for manufacturing use it should be devoted to producing steam-power, and that it should be directly applied only in manufacturing glass, and withdrawn from such wasteful expenditures as iron working, brick burning and the calcining of limestone. With such economy the last days of natural gas in Ohio may be its best days. Consequently all gas should be measured and meters and gauges everywhere introduced.

A very satisfactory paper setting forth a new method of determining the production of gas fields by the use of the pilot tube gauge closes this report. It is the production of Prof. S. W. Robinson, C. E., of the Ohio State University, and contains a great amount of tabular information from numerous measurements and the bases of calculations in the use of the gauge.

Labor Legislation in Germany.

On January 1, 1891, a new law relating to laborers and their protection in case of their inability to work by reason of sickness or old age took effect in the German Empire after having been adopted in the Reichstag by a vote of 185 to 165 on May 25, 1889, through the influence of Bismarck. The principal features of this law, with a short review of the legislation of other States in that direction, has been embodied in a report by Consul Gottschalk of Stuttgart. The new law of the German Empire provides that every person, male or female, 16 years of age or over, and occupying the position of laborer, servant, or clerk, whose wages or salary amounts to less than 2000 marks (\$476) per year must have himself or herself insured. The premium for this insurance is paid in equal parts by the employer and employee, and the Government itself contributes to each policy the sum of 50 marks annually. The insurance companies are State institutions under the control of, and operated by, the State, and the post-office employees, as well as policemen and other subordinates, attend to the serving of notices and collection of dues. The premiums to be paid are in proportion to the wages received and are divided into four classes, as follows: (1) Those earning 350 marks per year or less pay a premium per week of 14 pfennigs (3 cents); (2) those earning from 350 to 550 marks per year, 20 pfennigs (4.7 cents); (3) those earning from 550 to 850 marks per year, 24 pfennigs (5.7 cents); (4) those earning from 850 to 2000 marks per year, 30 pfennigs (7 cents). Of these above weekly amounts the employer pays one-half, but proof of sickness or military services exempts the employee from his contributions.

In case of inability to work (except from accidents or mishaps, for which special provision is made under former laws by the accident insurance, which is also compulsory), which inability is determined by the fact that the insured is by disease unable to earn one-third of the amount of his former wages, the benefits are as fol-

lows: First class receives annually 114.70 marks; second class, 124.10 marks; third class, 131.15 marks; fourth class, 140.55 marks. But he may receive more if he shows that for a long time his dues have been regularly paid. But there is this further condition that before the insured receives anything he must have paid his contributions for at least 47 weeks and was employed for five years before his disability occurred, but such employment need not have been continuous or uninterrupted; it suffices if he worked 235 weeks during that period. The age insurance provides that every person who attains the age of 70 years receives a pension from the State which amounts annually, in the first class, to 106.40 marks; in the second class, to 134.60 marks; in the third class, to 162.80 marks; in the fourth class, to 191 marks.

This law goes into immediate effect; that means the pension will accrue to every one who reaches 70 years after January 1, 1891, whether able to work or not, provided that he worked for three years prior to that date—that is to say, at least 141 weeks since January 1, 1888. But if he was sick during that time or his employer had no work for him (but not in excess of four months), the time so lost is counted as if he had worked. And the law also applies to persons who attained the age of 70 years prior to January 1, 1891. All contributions cease after that age, and, in case any employee who was insured and paid his contributions for at least five years dies before reaching the age of 70, then one-half of all paid by him will be returned to his wife and children. Every female may, in case she marries, also demand the return of one-half of her premiums. It is calculated that 11,000,000 persons will be subject to this compulsory insurance law, and the amount required for its operation will be about 220,000,000 marks, of which the employees, employers and the taxpayers (which means the State) pay one-third each. The payments are made in this manner. Each employee is furnished with a book in which stamps designating the amount paid are to be gummed in. These stamps are sold by the Government and are to be purchased by the employer, who may deduct one-half from the wages of the employee. Further provisions are made for cases when an employee becomes his own master or employer, and there are also penalties for violation of the law.

This law is auxiliary and intimately connected with the two other laws in force for some time relating to the compulsory insurance against sickness and accidents. As to the first, every laborer employed in mines, factories, railroads or shipping wharfs, building trade, machinery, or common carriers must be insured. The amount to be paid for such insurance is a sum not exceeding 2 per cent. of the daily wages, and must be paid in the proportion of two-thirds by the laborer and one-third by the employer.

In regard to the insurance against accidents, the same is confined principally to factories, and here the employer must pay the entire premium. In connection therewith the law regulating the liability of employers for accidents to their employees provides that the party injured may recover damages, and, if he was an employee of a steam, street, or railway company, the very fact that the accident occurred is *prima facie* evidence that the railroad is to blame, which, however, may prove that the cause of the accident was the own fault of the party injured or was caused by some superior force which could not be foreseen. In all other cases against factories and like institutions the burden of establishing negligence is on the party seeking to recover. But by the law regulating compulsory insurance against acci-

dents it is further provided that employees subject to such laws can only claim damages if they establish that the employer intentionally inflicted the injuries complained of. In addition to all this, there is a law which establishes and regulates the support of the poor by the town or township of which the party has been a resident for two years past. In case such party becomes impoverished at a place other than his home, he may be sent to his place of residence; but laborers or servants, in case of sickness, must be supported, if necessary, for six weeks by the community where the misfortune befel him or her.

Germany seems to be far ahead of all other States so far as legislation for the protection of laborers is concerned, but in some respects Switzerland is more liberal in that respect. The law in Switzerland makes the happening of an accident *prima facie* evidence, and it only releases the employer from liability in case he may show that the accident was caused by superior force or criminal act of a third person, or by the own fault of the deceased or injured party. And, in cases where any business detrimental to health is being carried on, the owner is also liable in case the employee contracts any disease caused by such business, as, for instance, match factories, white lead and mirror factories, wall paper factories (where arsenic is used). The law there further requires a record to be kept by the owner of all accidents, cases of sickness or deaths apparently caused by the business in which the laborer is engaged, and embraces all factories, railroads, steamboats, telegraphs, telephones, buildings, quarries, mines, &c.

Another feature, which is also found as yet only in Austria, is the law which fixes the maximum time during which labor can be demanded. That time is 11 hours per day, and on Saturdays or days immediately preceding holidays it is ten hours. It applies to all persons over 14 years of age, and prohibits work by all under that age and prohibits night work for females and for boys under 18 years. There are tribunals which, under exceptional or pressing circumstances, may extend the time of labor to a limited degree, but that is seldom done. All female married laborers must have a rest of an hour and a half at noon. There was at first great opposition to this law, but employers and laborers have acquiesced, and the former class have discovered that the disadvantageous results expected did not follow the enactment of this law. There is no proposition to change the law—only to extend it so as to reduce the working day to ten hours.

The law in Switzerland is especially significant, as that country has many and important industries and manufactories, principally for the export trade. Its products—clocks, watches, machinery, yarn and silk embroidery—come into competition with the products of other States. The country is divided into three districts; for each one an inspector is appointed, with an assistant, whose duty is to see that the law is carried out. They must visit each factory at least once every two years. There are in Switzerland 2322 factories, employing 1,160,000 laborers.

Another important feature is that the rules of each factory must be submitted for approval to the proper tribunal and must first be brought to the attention of the laborers, so that they may have an opportunity to express their opinion. This is done by posting up notices that such rules are in the office open to inspection, and that any objection should within a specified time be filed with the owner or with the tribunal. Mr. König, who is privy councilor in the department of trade in Berlin, has lately—probably at the instigation of his Government—made an investigation of the operation of this law,

and the result of said observation has been published and is very favorable.

The Swiss law seems to be regarded as a precedent, and the satisfaction which it gives encourages the laboring classes of Germany to have it also enacted in their own country, and with considerable hope of success. If they succeed, Germany will undoubtedly be the foremost of all governments in reference to its legislation for the protection of labor, for no other country has as yet adopted the system of insurance against sickness, accidents, disability and old age to such an extent as Germany. Naturally, the results will be watched with great interest.

Economy of Water Motors.

Stephen E. Babcock, engineer in charge of the water works at Little Falls, N. Y., read a paper on "Water Motors," before the American Water Works' Association. The following presents a summary of his conclusions:

"The economic features of the use of water motors comprise more factors than simply the saving, as compared to the cost of steam and its necessary attendance. There is the constant availability of a water motor under full capacity at any minute, the immediate stoppage of all running expenses when the particular work in hand is completed. There is also the immunity from danger from fire, hence less hazardous fire risk, the superior cleanliness as compared with steam, the absence of an intolerant heat in working rooms during the summer season, besides many other little conveniences incident to the use of water motors in place of steam. All these factors, however, may be said to inure to the benefit of the consumer, and not particularly to a water-works plant. It is not desirable to connect water motors where the working pressure is less than 50 to 60 pounds to the square inch. When either a public or private plant is taxed up to near its full capacity for domestic consumption and an additional supply is an expensive addenda to procure motors are out of the question, but when there is a surplus in excess of domestic uses water motors may be made a profitable adjunct at water rates as low as 3 cents per 1000 gallons. When rates up to 10 cents per 1000 gallons or upward are obtainable, all the receipts exceeding 2 or 2½ cents per 1000 gallons are profit. The use of water motors makes many properties lying along the lines of a water-works distribution system available for light manufacturing uses that were not previously so. Small industries may be profitably inaugurated in such localities in a town by the aid of water motors, making cheap property available for manufacturing purposes. All these additional and increased uses increase the number of wage earners at good wages, and the addition of good wages and good mechanics guarantees an increased use for domestic purposes; hence increased revenue on other lines than merely the revenue due primarily to water motors."

The discussion which followed consisted principally of a running fire of questions as to horse-power, cost, &c., and was participated in by Messrs. Chase, Alexander, Stebin, Milne, Denman and Marsch.

The Imperatori Process.

A series of tests have been carried out near Brewsters, N. Y., with the Imperatori direct process, which consists substantially in adding to the bath in the open-hearth process briquettes consisting of iron ore mixed with a reducing agent, like anthracite coal or coke. The idea, of course, is that the reduction of the ore proceeds while the briquettes are exposed

to the temperature of the open-hearth furnace, and that the sponge thus formed is immediately dissolved in the bath. That this does take place is evidenced by the fact that while in the furnace the briquettes show numerous flames of carbonic oxide on their surface, which do not appear after the sponge has sunk into the bath, which it does very quickly.

The tests in question have been carried out under somewhat disadvantageous circumstances, under the supervision of J. B. Nau of New York, to whom we are indebted for the following details relating to one of the heats.

We may state that the ore was produced at the magnetic separator of the Croton Iron Mines. The concentrates used were, however, produced at a time when the roasting capacity of the separator plant was inadequate, so that the sulphur contents of the ore are too high for the process, and are much higher than the concentrates now being shipped. Charge No. 6 consisted of the following:

3000 pounds pig iron, containing	3000 pounds iron.
3000 pounds old ingots, containing	1734 pounds iron.
1236 pounds scrap iron (deducting 6 per cent.), containing	1190 pounds iron.
3350 pounds ore briquettes, containing	1715 pounds iron.
250 pounds Mokta ore, containing	138 pounds iron.
155 pounds ferromanganese, containing	155 pounds iron.
50 pounds lime.	
Total in metal	7932 pounds iron.

The product was 6643 pounds of good ingots and 563 pounds of scrap, thus showing a loss of 726 pounds, or 9.16 per cent. If, however, no deduction be made for rust on scrap, &c., the loss figures out 10 per cent. The magnetite ore carried on an average 64 per cent. of iron and about 1 per cent. of sulphur, while the pig iron held 0.059 of phosphorus and 0.024 of sulphur. The briquettes were made of a mixture of 100 parts of ore, 25 of coal and about 1 to 1.5 of lime. They were mixed by hand and pressed in special molds, and were dried for about ten days. The time required for the charge was seven and a half hours, only one heat being made in 24 hours, no night work being done.

Mr. Nau makes the following computation to get at the loss of iron from the ore charged:

Charge.	Lbs.
Pig iron	3,000
Old ingots	1,734
Total	4,734
Ordinary loss, 7 per cent.	331 Lbs.
	4,403
Scrap (small)	1,266
Loss, 12 per cent.	152
	1,114
Ferromanganese	155
Loss, 15 per cent.	23
	132
Total yield in iron	5,649
Total steel obtained	7,206

Iron yield of ore	1,557
Ore used in briquettes, 2680, @ 64 per cent., containing	1,715.20
Mokta ore, 250 pounds, @ 55 per cent., containing	137.50

Total iron in ore 1,852.70

The total amount of ore, if Mokta ore is transformed into its equivalent at 64 per cent., is 2804 pounds, which ore yielded 1557 pounds of iron, or 53.80 per cent.

Since the ore carried 64 per cent. of iron, the yield was 89.8 per cent.

The burning of the Wilson Building and Taggart's large warehouse, on Abingdon Square in this city, caused a loss of nearly \$400,000. The Pneumatic Tube Company, Specialty Machine Company and Andrews & Co., brass workers, were among the tenants.

THE WEEK.

Mr. Depew would quiet the fears of grain growers who are apprehensive of railroad combinations to dictate the cost of transportation to the seaboard. He says: "It is utterly impossible that corporations should be formed to control vast lines of railroads in the West. No matter what the nature of the corporation, it would instantly be called a trust. The public would not stand it. State Legislatures and Congress would pass such laws as to ruin the security holders. Such combinations can never come to pass."

Sweden has a law providing that no person can immigrate from that country without first procuring a certificate of good character from the pastor of his parish. A contemporary observes that if Italy will pass a similar law Mr. Blaine will write her a very pretty and cordial letter of thanks in behalf of the American people.

Henry M. Stanley speaks enthusiastically of trade prospects on the Upper Congo when the railroad around the falls is completed. Navigation from the sea ceases at Mataddi, 110 miles inland. From thence a railway starts to Stanley Pool, 240 miles further. From thence there is an unobstructed waterway for 1000 miles, and there are 8000 miles of navigable waters, which connect Stanley Pool with the interior. On the banks of those waters there is a population of 800,000. Only ten miles of road are finished, but there are no serious engineering difficulties on the entire line. The work will require \$6,000,000.

Senator Chandler, chairman of the Federal Committee on Immigration, is gathering, by personal observation, full information respecting the operation of the new law restricting immigration. On his visit to New York he said: "It is a great question just how far to go in restricting the foreign element. We have not yet reached that stage in this country's growth when we want to keep out good immigrants." Emigrants who are crossing the border from Canada will receive attention.

President Harrison takes a hopeful view of the shipping question. In an address delivered in Alabama he said: "I believe we are to see now a renaissance in American prosperity and in the upbuilding again of our American merchant marine. I believe that these Southern ports that so favorably look out with invitations to the States of Central and South America shall yet see our fleets carrying the American flag and the products of Alabama to the markets of South America. In all this we are united. We may differ as to method, but if you will permit me I will give an illustration to show how we have been dealing with this shipping question. I can remember when no wholesale merchant ever sent a drummer into the field. He said to his customers: 'Come to my store and buy,' but competition increased, and the enterprising merchant sent out men to see customers; and so his fellow-merchant was put to the choice to put traveling men into the field or to get out of business. It seems to me that whatever we may think of the policy of aiding our steamship lines, since every other nation does it we must do it or stay out of the business, for we have pretty much gone out."

The Supreme Court will, on April 27, take up the question of the constitutionality of the McKinley law. A decision, therefore, may be looked for at an early day.

A group of immense warehouses is now building on the river front on the block between Twenty-seventh and Twenty-eighth streets, the largest in the country.

The persons interested are railroad men, sugar manufacturers and traders, constituting the Terminal Improvement Company, W. W. Rossiter president. Work on the warehouses was begun in March a year ago. There are to be 30 of them, each 50 x 100 feet and seven stories high. Including basements they will have 28 acres of storage room. The tracks of the New York Central will run through the building to pier 57, North River, which is owned by the company. The idea is that goods from foreign countries may be landed at the pier and stored in the warehouses until ready for shipment. The site of the warehouses cost \$400,000, and the estimated cost of the buildings is \$1,250,000. Two of the warehouses will be used for cold storage purposes.

A new Spanish treaty is promised, arranged on a reciprocal basis. Her revenues in Cuba are partly sacrificed.

Germany and France, it is reported, will both suspend the duty on cereals before autumn.

A committee of bankers, appointed by the Government, report that there is no danger of a financial crisis in Brazil.

By an issue of bonds \$4,000,000 becomes available for building a cable road in Third avenue to displace horses.

The Census Office has issued a bulletin, giving the population of cities in the country containing 8000 inhabitants or more. The total urban population in 1890 was 18,235,670, or 29.12 per cent. of the total population. In 1880 the urban population was 11,318,547, or 22.57 per cent. of the whole. The proportion of urban population has increased gradually during the past century from 3.35 up to 29.12 per cent., or from one-thirtieth up to nearly one-third of the total population.

Secretary Foster of the Treasury Department makes the following statement of the status of the Canadian Pacific-New York Central sealed-freight-transit question: "The principle has been definitely agreed upon to restrict the present policy of the Department, which permits the Canadian railways to carry goods sealed in bond across the continent into our territory for shipment from our ports to other countries. The goods which come to our frontier from Canada will therefore be treated precisely as if they had arrived at the port of New York. In other words, the policy will be to prohibit the transportation of goods in bond across our territory. In adopting this policy there is no purpose to attack any particular railway or system of railways, but merely to protect our own revenue system against possible frauds and irregularities. It will probably take about two weeks to arrange the details and put the new policy into effect."

Sales of the Whiskey Trust last year reached nearly 45,000,000 gallons.

A strike was threatened by the workmen on the new Federal Building in Brooklyn, because the contractors for the iron work, A. L. Smith & Co. of Philadelphia, had two non-union men at work. The trouble was settled by the two men joining the union. When this was done the walking delegates went a step further in their demands and asked that a representative of the firm come from Philadelphia and enter into a formal agreement not to employ non-union men. After a conference between the delegates and Superintendent Booth a settlement was reached and the men went to work.

Cheap molasses calls for cheaper modes of transportation and iron tank vessels are talked about. An experiment is now making in the Cuban trade with wooden vessels. A sugar company in Brooklyn, pro-

prietors of the Atlantic sugar house on Hamilton avenue, have just completed a large iron tank in which to receive the molasses from the vessels, from which it is to be pumped up as they lie alongside the pier in Atlantic Basin. The tank is 44 feet in diameter and 30 feet high.

Ex-Gov. Glick of Kansas says the great cause of agricultural depression is insufficient markets. Speculators do not aid in surmounting this difficulty.

Extraordinary fruit crops in California, Delaware and the country generally, together with cheap sugar, augur an unusual demand for tin cans.

The jute trust have completed an extensive mill, with warehouses and dock facilities at Green Point, Brooklyn, which is expected to turn out of rope, binder twine and bagging together about 60,000,000 pounds per year.

The labor men were beaten in the Massachusetts Legislature by the rejection, by a heavy majority, of a bill reducing the hours of labor of women and minors in factories to 58 hours per week. It was argued by the opposition that such a measure would cripple the cotton industries of the State and make more difficult the competition with manufacturers in the Southern States.

It is reported from Paris that the French are planning for the evacuation of Tonquin, which was expected to vie with Hong Kong as a highway of commerce into China. The cost of possession has been dear in blood and treasure; but, like other attempts at French colonization, failure is its only reward.

The National Association of Wool Manufacturers met in Boston last week and a special committee was appointed to confer with similar committees in New York and Boston, to devise some method of curtailing the credit system.

Russia not long ago made a commercial treaty with Abyssinia. Now she takes this route with the intention of reaching the great African lakes.

A new tax law in Ohio goes into effect June 1, which prescribes the manner in which manufacturers shall list property for taxation. On the first of each month they shall add to the value of raw material on hand the value of the product on hand; at the end of the year they shall strike an average, and the result is the amount they must list for taxation.

Excavating the approaches to St. Clair tunnel involves much hard work. The Grand trunk Railroad spent on the tunnel up to January 1, £387,000. The towns of Sarnia and Port Huron are arranging opening exercises.

Putting up the iron work on the Philadelphia City Hall tower has commenced. The tower is now 335 feet high and will be carried 212 feet higher.

The cash reserves held by the savings banks of the British Government afford a striking illustration of the economic axiom that a little money will go a long way if credit is unquestioned. The deposits of these banks amount, in the aggregate, to nearly \$535,000,000, but the cash held in readiness to meet this great sum is only about \$2,500,000. Nobody lacks faith in the postal savings banks of Great Britain, and therefore they are in no danger of "runs" which might quickly exhaust their cash supply.

The manual training conference in Boston, which lasted several days last week, was attended by 15,000 persons. The schools in New York, Boston, Philadelphia and Chicago were all the subjects of inquiry and comparison, and the school at Wilmington, Del., where forging and ma-

chine-tool making are taught, received special attention. The Boston Institute of Technology made a good display of work in machine-tool making.

The Germans are crowding English traders at Zanzibar and other ports on the eastern coast of Africa.

The contract for the new West Point Academy was awarded to J. E. & A. L. Pennock of Philadelphia for \$447,891, the walls to be of stone.

Plans for the Philadelphia General Exchange contemplate a fire proof structure nine stories high. The proposed capital is \$1,000,000. A feature will be an exhibition gallery for dealers in specialties in which to display their wares.

A successor to the oatmeal trust has been formed in Chicago.

Ground has been broken for an additional building to the high class technical school in Brooklyn, known as the Pratt Institute. Although Mr. Pratt had expended over \$1,500,000 in equipping and endowing the school, he concluded to invest at least \$500,000 more in the institution.

The Canadian Pacific Railroad will shortly commence the construction of its new bridge across the Niagara River. The bridge will cost the company over \$2,000,000, and will be one of the most substantial structures in America.

A Liverpool steamer bound to Portland, Maine, dropped off 500 passengers at Halifax, who will come into the United States by rail, to avoid the immigration law.

A Lowell spinner says that the strikers in Newark were unreasonable; that they were working less hours and receiving more wages than first-class mechanics in Massachusetts and were nearly 100 per cent. better off than the spinners in Lowell. The strike is now off, it being agreed that many shall return.

The several pumping stations in the Philadelphia water-works system have a capacity of about 200,000,000 gallons every 24 hours.

Brazil's republican constitution was promulgated February 24. The new Commonwealth of Australia followed only a little later.

Speaking of the obstacles encountered by Americans in pushing their trade, the Mexican *Financier*, published at the capital says: "All the European legations here are practically commercial agencies, and their efforts to improve trade being manifested in excellent reports to their respective Governments, the entire European influence here is directed toward keeping trade between this country and the United States in the hands of merchants from across the Atlantic." The new customs tariff will go into effect July 1. Some reforms will be made, but nothing extensive.

It is proposed to build for the Exposition at Chicago, a hydraulic railway similar to that which was so successful at the Paris Exhibition. One has just been fitted up at the Crystal Palace, London. The principle used is that of sliding a car on a thin film of water, the tracks being very broad and the water abundant. The train is propelled by jets of water forced against the bottom of the car by means of a number of openings in a water pipe. As the train passes, the water from the spigots, as the openings are called, is shut off automatically by means of a valve.

We are indebted to Staver & Walker of Portland, Ore., for a handsomely illustrated work on Portland.

The Iron Age

New York. Thursday, April 23, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

We regret to announce the death, at Chattanooga, in his 63d year, of Samuel Brunswick Lowe, who for a long series of years was the representative of *The Iron Age* at Chattanooga. Although Mr. Lowe was born in New York he became identified with the iron industry of Tennessee at a very early date, building the first mill in the State previous to the war. The works were destroyed, and Colonel Lowe went into the manufacture of cannon for the Confederacy at Selma, and was active also in furnace and railroad work during that period. Returning to Chattanooga in 1866, he built a large plant, but was forced into liquidation during the panic of 1873, and has since then carried on business as a dealer in iron and machinery and as a manufacturer of mineral paint. Colonel Lowe was a close student of the development of the Southern iron industry, to which he contributed much, although he represented at all times the more conservative element.

Southern Furnaces and Their Interest Charges.

A thoughtful contribution on the circumstances affecting the Southern iron industry appeared recently in the columns of the *Philadelphia Manufacturer*, in which the writer points out that the greatest burden resting on the iron makers of Alabama, Tennessee and Virginia is the interest charges. These he divides into two classes—the interest on bonded capital and the interest on borrowed money. Dealing with the former, the writer in question instances the Tennessee Coal, Iron and Railroad Company, whose interest on bonds he figures at \$1.50 per ton of iron produced, and the Sloss Iron and Steel Company, whose interest charges are made to amount to \$2.20 per ton of pig iron. He distinctly disclaims any desire "to direct attention to the two companies named as examples of mismanagement or defective constitution," but cites them simply "because they illustrate very forcibly a serious weakness in the Southern iron industry." It is not quite fair to put the matter in this light, although it is equally unfair to ignore these points when comparing costs in different sections of the country. The Southern producers named, and many others like them, are the owners of large tracts of mineral lands. Their interest account on bonded capital represents, to some extent, the royalty and profits on ore and coal, which with the majority of producers elsewhere enter directly into the accounts as cost of raw material. With the Southern producers the final profit on

the manufacture of pig iron must represent the aggregate returns on capital from the ore and coal in the ground to the market product. We have advisedly stated that the interest account to some extent represents these items, because in the majority of instances Southern companies have acquired tracts of mineral lands absurdly out of proportion to their immediate or prospective needs. In other words, a considerable part of their capital is embarked in the speculation for an advance in mineral lands. It may be true that these have been purchased cheaply; that ultimately they will bring large returns, but it is certain that in the interval their ownership imposes heavy burdens, which must be borne by the product from often a very small part of the estate.

Whether it is a wise policy we do not propose to discuss. The iron trade of the country must deal with the facts as they are. To the concerns who have adopted it, the interest charges on bonds, whether issued for mineral lands, railroads or coking plant, are as much an item of cost as the labor account in making pig iron. It is usual in other parts of the country to charge the furnace with the ore mined by the company or the coke produced by them at the price which it will fetch in the open market. This some of the Southern companies do not do, and the natural result is that the cost sheets show extraordinarily low figures. They could probably be eclipsed if the furnaces of the Lebanon district put in their roasted ore at 75 cents a ton, or the leading Lehigh producer charged its rich Richards ore at \$1.90 at furnace.

But we believe it unfair to urge that the Southern companies are laboring under an interest burden from which their rivals in other parts of the country are free. What the Southern ironmaster pays in interest on bonds and the sums which he must earn to pay fair dividends on large issues of stock, the producer north of the Ohio and the Potomac must pay indirectly in the form of royalty and profit on ore and profit on coke. The latter need only meet the interest charges on cost of plant; the former is trying to make all the profits along the whole line, and naturally needs more capital. If all his earnings go to meet fixed charges then the stockholders are simply part owners in a speculation in mineral lands, who are waiting until the day for realizing has come, or until high prices of iron allow of sufficient accumulation of funds to build additional plant to bear a share of the cost of carrying the lands, and thus give a chance for making a strictly manufacturing profit.

The prevalence of the system of ownership of mineral lands in the South, while it keeps some concerns land poor, has the tendency with others less heavily loaded to further a policy of extension of manufacturing plant. In other words, when the company—and there is one conspicuous example in the Birmingham district—has a moderate though ample estate, is actually making money in operating its furnaces, it pursues the policy of reserving a part of the earnings for building addi-

tional stacks, which then aid in converting a further part of the mineral lands into immediately profitable property.

We are inclined to believe that nearly every larger and older Southern company has acted upon this policy, but the majority of them have evidently rushed in too hastily, and the day of dividends has been deferred until the finances can be put into better shape. One concern, relying on the possession of large tracts of land, found after adding heavily to plant that its ore property was not all that had been expected, and succeeded in acquiring the best body of ore in the Birmingham district.

Another point which the writer of the article referred to has brought up is the heavy charge upon Southern producers of interest on borrowed money. This applies not only to town-lot furnaces, but also to those plants built to make iron at a profit. It is the outgrowth to some extent of the necessity to accumulate fixed charges, and also in a measure to the distance of markets. That these necessities have been taken advantage of both by commission merchants and by consumers is well known, and it is true also that they have seriously influenced the iron trade by sacrifice sales at different times. But no one will question that every year puts the better concerns into more favorable shape in this respect, and that Southern furnace men will gradually become more experienced and more conservative sellers.

Transportation Through Canada.

The transportation of foreign goods through Canada to the United States is one of many questions arising from time to time in the peculiar and somewhat unsatisfactory trade relations that exist between the two countries. The probability that very soon this branch of traffic will acquire new importance, as soon as the ocean service on each side of the continent shall commence in connection with the Canadian Pacific Railway, invests with special interest the announcement by the Treasury Department at Washington of the intention to issue an order abolishing bonding privileges heretofore given to Canadian roads under consular seal, which is doubtless in anticipation of that event. Naturally New England is much disquieted in the prospect, as her interests are most directly involved, and it appears from interviews held with the president of the Boston and Maine and Maine Central railroads respectively that much apprehension is felt respecting the possible consequences. Until details of the new arrangement are perfected and become operative it will be impossible to determine their precise significance. President Frank Jones of the Boston and Maine Railroad thought the proposed decision would tend to clog commerce and interfere with the business of the railroads. It would necessitate, he said, the examining by a customs officer at the frontier of the contents of every carload of goods bound through the United States territory

for shipment in the British steamers to see whether it agree with the manifest. It would involve the side-tracking of the trains and delay. Goods would not reach the steamers in which they were intended for transport, and shippers would be greatly inconvenienced. President Arthur Sewell of the Maine Central agreed with him.

The Dominion ministerial organ in Montreal, however, is of the opinion that there is needless alarm. The railway representatives just named, we are told, have "jumped at the conclusion" that the carriage of goods through Canada between points like Boston and St. Paul will be inconvenienced. But this class of traffic, we are reminded, "will not be interfered with at all." On that point Secretary Foster is quite explicit. "With the shipments arising in American territory," he says, "the Department will, of course, have nothing to do, as such goods are not dutiable. Such traffic will be carried on as heretofore without any interference from the Department." The matter, the Montreal *Gazette* observes, "is thus narrowed down to through shipments from foreign countries into the United States over Canadian railways, as, for instance, tea shipments from China and Japan via Vancouver. These, of course, already undergo examination before the consular seals are affixed at Vancouver, and have heretofore been permitted to proceed without break of bulk or detention to such points of destination as Chicago, New York and Boston, but under the proposed order a second examination will be required at the frontier point of entrance into the United States."

The Dominion oracle quoted admits, inadvertently, we must assume, that some inconvenience may arise, and that possibly advantages now enjoyed may be reduced in a degree, but it does not "apprehend that the enforcement of the order will seriously affect either the value or the volume of the traffic of Canadian railways." This is a consoling view. Moreover, the authority named resents the imputation that Canada may resort to retaliation. So far from this "Secretary Foster need fear nothing from Canada if he confines his orders to the protection of American revenue." The proof is undoubted that serious frauds have been committed under cover of the consular seals, through the collusion of officials and by other means. Large amounts have been lost to the Treasury, and it is satisfactory to observe a prompt acquiescence by the Dominion in measures designed to rectify wrongs so notorious. A harmonious working of international relations as respects foreign trade is sincerely to be desired.

Touching this subject Senator Cullom, chairman of the Interstate Commerce Commission, expresses satisfaction that decided measures are contemplated to subject Canadian railways to the provisions of our interstate laws and prevent the diversion of freight from its legitimate channels. "We must make war on Canada," he says, "all along the line for

the protection of our commercial and transportation interests."

Business Questions and Politics.

It is not surprising that the late Commercial Congress at Kansas City terminated its proceedings with considerable tumult. The congress was intended by its projectors to exert a profound influence on public opinion and thus to help settle important business questions agitating the public mind. They were quite correct in presuming that a gathering of representative men and delegates from commercial organizations throughout the country would have, if they could be brought to agree, a wider influence than any political body in molding the sentiments of the people and crystallizing their views into specific and definite form. Charges have been made that the originators of the congress were actuated by narrower views, but such charges are not only difficult to prove, but they lack force on account of the official character of the invitations first sent out. The governors of the Western States uniting in the call for such a congress feel more keenly and appreciate more fully the revolution in party attachments now going on than the residents of other sections of the country. They evidently struck a popular chord when they issued the call, as shown by the tone of the public press in discussing the subject, as well as by the favor with which it was received in commercial and business circles. Had there been any suggestion of partisan influence in the matter it would have been scented very quickly by sharp noses ever on the alert for anything suspicious. But it was nevertheless absolutely impossible for such a convention to unanimously agree or even to approach an agreement on the great questions of the day. That might have been foreseen from the beginning.

The political questions with which the country is now concerned are almost exclusively business questions. Parties are not divided with reference to the foreign policy of the Government or the administration of internal affairs. They accord perfectly when a question comes up involving our relations with other countries or the reform of the civil service, but when the tariff or silver coinage is discussed a line is at once sharply drawn and the differences defined are irreconcilable. Compromise does not seem possible, half-way measures are eschewed by either side, and temperate discussion becomes a departed grace. A division is at once made into hostile camps, each charging the other with betraying the real interests of the country. The difference of opinion is also growing rather than weakening, and individuals who once took no interest in such topics have discovered that they have very pronounced opinions upon even the most abstruse phases of Tariff or currency complications. No convention or congress of business men can now be expected to formulate a platform upon which they can even faintly hope to agree—unless they are

all of one political party. And if either side should happen to get outvoted in adopting a set of resolutions it is the most natural proceeding in the world to accuse the other side of packing the convention.

It is well that the great business interests of the country are not seriously disturbed by these discussions and partisan differences. If the allegations were true which are made by extreme partisans on the one hand the industries of the country would now be in a state of advanced decay with no chance of recovery; and if the charges of their opponents are well founded the man who builds a new factory or extends his old one is a hopeless idiot. The decision of the commercial congress at Kansas City may influence Governmental appropriations for the improvement of the Mississippi River or the reclamation of arid regions in the West, but it will have no effect whatever in influencing public opinion with regard to either the currency or the tariff. These have become strictly partisan questions and will be fought out on that issue, with no expectation of a permanent settlement until one side or the other is so overwhelmingly beaten that the party leaders can see no hope of recovery.

Forced Draft.

It is doubtful if there is one point in marine engineering having more outspoken friends and enemies than that of forced draft. It has been pronounced to be "an invention of the Evil One which should be entirely abolished, beyond the use of fans," and it has been claimed to be the sole reliance of the commander in emergencies requiring great speed, and therefore the maximum power. One question agitating engineers is: If forced draft is only to be used in time of need, would not the fact that he is subjecting his boilers and engines to undue strains so influence the officer that he would prefer his present danger rather than fly to others he knows not of? It will take time, and time alone, to settle the question.

Some British engineers are in favor of abandoning forced draft in war vessels and as a compensation lengthen the funnels so as to augment the natural draft. It is stated that several ships fitted in this way have had no difficulty in generating all the steam needed by the engines. The induced current principle, as found in locomotives, is receiving much attention, and its applicability to marine boilers is being studied. This would do away with the closed stoke hole nuisance, and would, its advocates claim, solve the problem. It has been tried, though on a vessel of comparatively small size, by fitting a small stack in a funnel of usual size. Proper damper arrangements permitted the closing or opening of either stack. To obtain the maximum draft the current from a blower was directed up the small stack, the other being closed by its dampers. Under ordinary conditions the draft was only a natural one up the large stack, the other being then closed. This was found to work to good advantage. Judging from

the close attention the locomotive is now receiving, it is fair to assume that the methods there employed to such good advantage will be tried on an extensive scale in connection with some marine boiler.

The Tin Plate Movement.

An accidental meeting at Pittsburgh of a number of iron manufacturers interested in the development of a tin-plate industry has led to a movement which is likely to carry out the suggestions urged by *The Iron Age* last week. The necessity of doing the missionary work alluded to was acknowledged, and it was decided to hold a meeting in this city on April 28 to discuss the advisability of employing some person to carry out the plan. C. R. Britton of Cleveland, Ohio, has been appointed secretary *pro tem.* to arrange for the meeting, and already reports an earnest interest in it. While, of course, all the sheet mills in the country are not adapted to rolling sheet for tin plate, a number of them unquestionably are. Even those which are not could be changed in a short time and at a comparatively small expense.

The movement certainly deserves the earnest consideration of the sheet mills of the country, who should not fail to secure a representation at the meeting. It is possible that it may prove more advantageous to leave the rolling of sheets to the mills who are in a position to do so or are willing to make the necessary arrangements and to have the tinning plant proper in the hands of others. We are informed that the assurance of a regular supply of black sheets at a suitable price is all that is needed to lead capitalists to embark in putting up the sufficient number of tinning stacks.

PERSONAL.

Park Benjamin will talk on the Allusions Previous to Galvani, at the next social reunion of the American Society of Mechanical Engineers on April 30.

J. M. Diven of Elmira was elected president of the American Waterworks Association, and the next annual meeting will be held in New York.

F. S. Witherbee of Witherbees, Sherman & Co., Port Henry, N. Y., has sailed for England. He will probably return in a month.

David Williams, publisher of *The Iron Age*, has sailed for a brief tour in Europe.

Jeremiah Head of Middlesborough, England, who was one of the party of foreign iron makers, read a paper on the observations made during his tour in this country before the Cleveland Institution of Civil Engineers. It contains little of criticism or comment interesting to Americans.

General John Newton of New York, consulting engineer of the Chicago Drainage Canal, has resigned.

F. Monks of Warrington, England, one of the members of the Iron and Steel Institute, has declared in a recent lecture that the system of protection adopted in the United States has been and is a huge mistake. He says, however, that "before the present century is out coal proprietors will find American competition the most

severe of any they have yet had to face, and with this difference, that the American can keep it up without loss, for he will be able to sell and make a good profit at less money than it costs to get our English coal under present conditions."

Oberlin Smith of Bridgeton, N. J., has sent to the Grounds and Buildings Committee of the Columbian Exhibition, the design of a 600-foot tower, upon which there is to be pivoted an oscillating beam 1100 feet long. At each end of this beam there are to be suspended two globes 100 feet in diameter in which visitors are to be admitted and raised 1100 feet from the ground.

George W. Goetz of Milwaukee sails for Europe at the end of this month.

F. I. Freeman, formerly president and general manager of the Aetna Machine Company of Warren, Ohio, has accepted the position of general superintendent of the Totten & Hogg Iron and Steel Foundry Company of Pittsburgh, made vacant by the resignation of Robert C. Totten.

J. C. Grey, vice-chairman of Gordon, Strobel & Laureau, Limited, of Philadelphia, has started on a trip to Tennessee and Texas to examine some iron ore properties. He expects to be absent a month.

OBITUARY.

PHILIP WOOTTON.

Philip Wootton, one of the pioneers of Boonton, N. J., and formerly superintendent of the rolling mill department of the Boonton Iron Works, died at that place on April 10. He was born in Staffordshire, England, in 1805, and was nearly 86 years of age at the time of his death. In 1830 he came to this country, and went directly to Boonton in the service of the New Jersey Iron Company, and was identified with that place and the iron works from that time until 1876, when the works ceased to be operated as a whole. He witnessed the growth of Boonton from a town of six houses to its present population of some 4000 people, and was prominent in every movement for the advancement of its interests. He saw the development of the large iron works to their present size, and aided in their establishment. He held various positions in the works, and was made superintendent of the rolling mill in 1845. He was the first to use water doors and frames in a puddling furnace, but never patented his invention. It is said that under his direction anthracite coal was first used for puddling.

He was a man of large sympathies and great benevolence, and his many charities were unostentatious. The poor of Boonton lose a man to whose kindly heart no vain appeal was ever made, and the iron business parts with nearly the last of those old Englishmen who aided so much in the establishment of the industry in this country.

AUGUSTUS B. DAVIS.

Augustus B. Davis, for many years a well known manufacturer of weighing machinery and an inventor of some prominence, died of apoplexy in Philadelphia on the 17th inst., aged 76 years. Mr. Davis learned the trade of machinist with the now extinct firms of Jacob Senneff and Merrick & Agnew. He was a versatile inventor, having patented at various times no less than 25 inventions. These were all improvements either on weighing machines, instruments of precision or railroad car springs. The car spring he patented about 25 years ago, it is said, resulted in revolutionizing the car spring business.

CHARLES B. BAEDER.

Charles B. Baeder, of the glue firm of Baeder, Adamson & Co., died at his home, No. 1308 North Broad street, Philadelphia, on the 17th, after an illness of two weeks. Mr. Baeder was attacked with diabetes, and his condition was impaired by a succession of colds which developed typhoid fever. He was about forty-nine years of age, and leaves a wife and one daughter. Mr. Baeder was the eldest of several children of Charles Baeder, a native of Germany, who came to this country early in life and founded the firm of Baeder, Adamson & Co. in 1828. The works were located then, as now, on the outskirts of Philadelphia, besides which they have factories in Newark, N. J., and Woburn, Mass., and stores in New York, Philadelphia, Boston and Chicago. Since the death of the elder Baeder, some years ago, Charles B. Baeder had been practically head of the firm. He was a director of the Mechanics' National Bank, and also director and former president of the Philadelphia Finance Company, and an active member of the Manufacturers' Club, all of Philadelphia.

H. D. WATERMAN of the firm of H. D. & S. J. Waterman, agents for manufacturers of Iron and Steel, at St. Louis, Mo., died April 15. Mr. Waterman came to St. Louis in 1866, and was first connected with the firm of Warren Waterman & Co., dealers in carriage hardware, afterward forming a company known as Waterman Bros. & Co. The business will be continued by his son, S. D. Waterman.

GEORGE A. BROWN, foreman of the spike mill at the Tredegar Iron Works, Richmond, Va., was instantly killed a few days ago by the breaking of a revolving emery wheel. Mr. Brown came from Pittsburgh, Pa.

A Boston-Built Steel Bark.

Plans for a steel bark of 1398 tons have been drawn for Charles H. Nelson of Boston, and it is understood that more than half of the amount necessary to build the vessel has already been subscribed by Boston shipowners and merchants. The plans show a remarkably fine vessel, of handsome model and great carrying capacity. Its length is 220 feet; breadth, molded, 36.8; depth, molded, 22.6. The capacious cabins are to be under the poop deck, and forward there is a large and comfortable house for apprentices and seamen. As is customary in modern vessels, the bark will have a steam hoisting engine to assist the sailors in the heavy work. It is Captain Nelson's purpose to carry several boys of good families to sea with him as apprentices—a system which is compulsory in the English merchant service, and can profitably be imitated in our own. It is estimated that the bark will cost about \$100,000. Captain Nelson says that it could probably be built for about \$15,000 less in England, but after studying the matter over he has come to the conclusion that the vessel, if built here, will be worth fully \$15,000 more than if built abroad, because of the superior character of American material and workmanship. If Captain Nelson succeeds in carrying out his plans, he will have the bark constructed by Harrison Loring, at his extensive establishment in South Boston.

L. & R. WISTER & CO. of Philadelphia have been appointed sole selling agents for the Jenkins Upright Cushioned Hammer, which is manufactured by Jenkins & Linde of Bellefonte, Pa.

The opinion prevails that the proposed sale of the Tennessee property of the Tennessee Coal, Iron and Railroad Company to an English syndicate for \$2,500,000 will not be carried through.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., April 21, 1891.

The extraordinary development which has been reached in the United States in the scope and perfection of machine tools was exhibited in the recent opening of bids for this class of appliances for the plants at the New York and Boston navy yards. Some idea may be formed of the character and prices of these machine tools by the following official list of lowest bidders.

W. H. Wood, Media, Pa., hydraulic riveter, \$6725; Morgan Engineering Company of Alliance, Ohio, traveling steam cranes, \$12,750 and \$7775; R. A. Robbins, New York, engine lathe, \$15,250; E. L. Maxwell, New York, electric crane for boiler shop, bids ranging from \$1840 to \$18,725, according to design; electric crane for foundry, from \$1679 to \$12,812.

For tools for the Boston yard the lowest bidders were: E. L. Maxwell, New York, boiler-drilling machine, \$2470; W. H. Wood, Media, Pa., hoisting machinery, \$4525; hydraulic hoist, \$725; Morgan Engineering Company, Alliance, Ohio, hydraulic riveter, \$7180; hoisting machinery, \$9260; flanging machine, \$6850; hydraulic accumulator, \$2935; Niles Tool Works, Philadelphia, punching and shearing machine, \$3810; vertical bending rolls, \$8200.

Many of these devices are not only novel and a vast improvement upon machines for similar work of the old patents, but are far in advance of similar constructions in the iron-working countries of the Old World.

The Midvale Steel Company of Philadelphia and the Bethlehem Iron Company of South Bethlehem were also bidders for steel plates and gun forgings at the following figures for 6-inch breech-loading rifle guns:

Midvale, 35 cents per pound, delivered in 40 days.

Bethlehem, 30 cents per pound, delivered in 197 days.

Bethlehem, 32 cents per pound, delivered in 4 months.

8-inch breech-loading rifle:

Midvale, 30 cents per pound, delivered in 197 days.

Bethlehem, 30 cents for 40-caliber guns, delivered in three months, and three 35-caliber guns in seven months.

Mines and Mining.

Under the head of "Mines and Mining" the Census Office has issued a very interesting and valuable bulletin on (1) the discoveries of precious stones in the United States and (2) statistics relating to mineral specimens sold to museums and for private collections, with (3) an account of the diamond-cutting industry, production of precious stones and ornamental minerals. This is the first time in census history that this important field has been covered. The total value of stones in 1889 was \$188,807. The only diamonds found were in well-defined districts in California, North Carolina, Georgia and Wisconsin. Sapphires, rubies and other colored varieties of the corundum gems were found on the Missouri River, near Helena, Mont., and in North Carolina. The other varieties of gems are beryl, turquoise, garnet and olivine gold quartz and other varieties. The precious and ornamental stone producing States and Territories are Arizona, Arkansas, California, Colorado, Kansas, Maine, Michigan, Minnesota, Montana, New Mexico, New York, North Carolina, Texas, Utah and Virginia. The product of New York was about \$1800 value of quartz and fluorite.

Reciprocity.

Advices through official sources from New York are to the effect that the reciprocity treaties and the postal subsidy act are already bringing to that city business men who hope greatly to increase their South American trade. Manufacturers and jobbers are getting down their atlases and making inquiries about the cities and provinces along the coast, and the products which they export and the American articles which they are most likely to want. The tide of business turns to the southward the more quickly because it is believed that it is not yet most advantageous to try to attack the strongly entrenched European companies for the European mail service. In Central America and the West Indies, however, are fields for the American producer and manufacturer and the American ship owner.

As soon as the President returns he will renew his personal direction of reciprocity negotiations, and expects to add other countries to the list. This new feature of our American economic system is already a success beyond every expectation.

Tariff Decision.

The following official decision relating to the classification of imported iron, steel and manufactures thereof has been issued: In a case of black taggers iron, the appraisers say: "It is admitted that the goods are black taggers iron or steel, and are valued at over 3 cents per pound. Duty was assessed at 45 per cent ad valorem, act of October 1, 1890. The importers claim the article is dutiable at 1 $\frac{1}{2}$ cents per pound. They contend that the limitation as to value has reference to skelp iron or steel, and does not apply to sheets of iron or steel, commercially known as 'common or black taggers iron or steel.' They further contend that the article is entitled to entry at 1 $\frac{1}{2}$ cents by virtue of the similitude clause, for the reason that the new tariff act makes special provision for all iron or steel commercially known as common or 'black taggers iron or steel,' thus removing the same from the list of manufactures of metal not otherwise provided for, and that the article valued at above 3 cents per pound is 'similar in material, quality, texture and use' to that valued at a less price. Inasmuch as the paragraph includes only such of the articles as is valued at 3 cents per pound or less, all valued above 3 cents per pound is in effect excluded from classification under that paragraph, and being provided for as a 'manufacture not specially enumerated or provided for, composed . . . of iron or steel,' is also excluded from the operation of the similitude clause of the new tariff act."

Reappraisements.

The following reappraisements of value have been made by the United States General Appraisers:

Steel wire from Birmingham:

Patent steel music wire in 1-pound coils and 1-pound bundles, entered at 4/9 per pound sterling. No advance.

No. 6, 7, 9, 10, 11, 13, &c., No. 23, in large 5-pound coils marked R on label, No. 21, in 5-pound large coils marked B C on label, entered at 1/1 per pound sterling. No advance.

Cold-rolled steel sheets from Sheffield:

Bessemer sheet steel for corsets, &c., entered at £12. 15/ sterling per hundredweight. No advance. Add for band and case and packing.

Manufacture metal and glass from Birmingham:

1 cup and saucer, entered at £1. 5/, less 1 per cent. No advance.

Steel wire from Birmingham:

600 D, 198 patent steel music wire in 5-pound coils, marked on label ASWG, entered at

1/1 sterling per pound. No advance.

Steel wire from Olecketon:

Plated music wire entered at 1/2 sterling per pound. No advance.

Polished music wire, entered at 1/ sterling per pound. No advance.

The Virginia Development Company have recently paid a dividend of 3 per cent.

The Southern Iron Furnaces.

A gentleman who has recently made a two weeks' trip through the Southern iron field sends us the following in relation to the pig iron outlook from that standpoint:

The stock of pig iron in furnace yards in the Southern iron district has rarely if ever been so small. One company, with nine furnaces in blast, had a total stock of 17,000 tons on hand April 1, which was 8000 tons less than February 1. Another company, with one furnace in blast, had 11,000 tons on hand, being 4000 tons less than February 1, and from rate of current shipment over production by these two companies their stocks will probably be 10,000 tons less on May 1. These two have the only considerable stocks of iron in the Alabama district, other companies having generally not more than two to five days' stock on hand. Another large furnace company in the district, with a daily output of 600 tons, have not had more than 1000 tons on their yard at any one time for several weeks.

The stocks at nine other furnaces are respectively, 550, 700, 1279, 800, 250, 1100, 700, 500 and 200 tons. The above companies represent all but two furnaces in blast in Alabama. The last official reports show about 31,000 tons on hand April 1 in Alabama and Georgia, and 89,000 tons in the Southern States, as against 112,000 tons on hand March 1, showing a loss of 23,000 tons in the month. Most of the furnaces in the Southern district, although they have made very light sales in the last 30 days, still have orders on books sufficient to exhaust their make for 90 days ahead. During the last three months their orders have so largely exceeded their output that many thousands of tons of high-priced contracts have been canceled by buyers on account of failure to deliver. Two companies, having one stack each, have had 5000 and 6000 tons respectively canceled, most of which orders were at prices ranging about \$8 per ton above the present market price.

Such of these companies as last year sold iron largely by warrant have realized a very handsome profit recently through purchasing warrants for their own brands in the open market, canceling them, and shipping the iron thus obtained on their high-priced contracts, which would otherwise have been canceled. Notwithstanding this unusual scarcity of iron at furnaces and the known small stocks in the hands of consumers, resulting from last winter's panic, there is a general impression that prices will go lower in the near future. This grows largely out of the fact that new contracts have been few during the last 80 days and the belief that the output will be largely increased by more furnaces being put in blast soon.

The large orders already booked, the small stocks on hand in yards of both producers and consumers, and the unusually favorable crop prospects, do not seem to be having the influence they should in giving confidence to producers. Should a decline in prices occur now, it will very likely result in a sharp advance some time about July, if the crops yield anything like as well as now promised. April and May are usually light buying months, whereas July is usually a heavy buying month. A little more nerve on the part of producers might prevent the decline altogether now.

Carl Sahler is putting up the first Herbertz cupola at the foundry of Thacher & Young at Elizabethport, N. J., for the Herbertz Steam Jet Cupola Furnace Company. The cupola has a melting capacity of 2 tons per hour, and will be ready for the inspection of any interested parties next week.

Industrial Stocks.

The principal industrials now on the market, and more or less dealt in daily, are the American Cotton Oil Trust, with a nominal capital of \$32,000,000; the American Sugar Refining Company, whose capital is \$50,000,000; the American Tobacco Company, capital \$10,000,000; H. B. Claflin & Co., capital \$10,000,000; the Distilling and Cattle Feeding Company, capital \$31,500,000; the National Cordage Company, capital \$15,000,000; the Lead Trust, capital, \$90,000,000; the Linseed Oil Trust, capital \$18,000,000; the Starch Trust, capital \$9,500,000, and the Standard Oil Trust, capital \$90,000,000. The aggregate of these capitals foots up \$356,000,000 and while the market price of the shares represented, such as those of the Lead Trust, for example, is in some cases very much below par, that of the Standard Oil Trust certificates is as much above it, so that, in round numbers, the amount of the property involved is considerably over \$300,000,000. The New York *Sun* says: "If the dividends now paid by industrial investments can be counted upon to continue, they are all of them excellent bargains. At the current prices they yield from 8 to 12 per cent. per annum, and more, too, on the money paid for them, which is twice as much as can be got in any other way. The explanation of the phenomenon is that the public have not learned to believe in the permanent continuance of the dividends and need to be tempted into buying by low prices. When the Standard Oil Trust certificates were first put out, seven years ago, they sold at 90. Since then the total amount of them has been raised from \$70,000,000 to \$90,000,000, and yet they now sell at about 160. They pay regular dividends of 12 per cent., or nearly 8 per cent. on the selling price, which shows that they are still not regarded as perfectly to be relied upon. The Sugar Trust paid 10 per cent. on \$50,000,000 for two or three years, and yet its certificates went down at one time to very nearly half their nominal value. The new corporation has to pay on \$25,000,000 only 7 per cent., so that it will be able, if it does as well as the old trust did, to pay 13 per cent. on the other \$25,000,000. The Distilling and Cattle Feeding Company pays 6 per cent. per annum on par, which is over 12 per cent. on what the shares sell for."

Thomson-Houston Company.

The annual meeting of the stockholders of the Thomson-Houston Company was held last week at Middleton, Conn., and the following elected directors for the ensuing year: Henry A. Pervear, Charles A. Coffin, Jos. N. Smith, Benj. F. Spinney, Charles H. Newhall, T. Jefferson Coolidge, Jr., S. Endicott Peabody, Elihu Thomson, Frederick P. Fish.

The annual statement for the year ending February 1, 1891, is a document of 18 printed pages. A short history of the company from their inception in 1880, as the American Electric Company, with a capital of \$125,000, is given. The present management took possession October, 1882, and began manufacturing at Lynn in the autumn of 1883. They now have 11 factory buildings at Lynn, and their sales have grown as follows:

1883.....	\$426,987	1887.....	\$2,335,594
1884.....	700,470	1888.....	4,435,902
1885.....	988,995	1889.....	8,222,780
1886.....	1,405,041	1890.....	10,617,661

These only embrace the transactions of the Boston office. Branch offices added would increase operation about 52 per cent.

The obligations to the company have

been reduced by \$3,500,000 the past year, and there are no present indications of the acquisition of any further manufacturing property. A table of additions to capital stock is given, by which it is shown that the \$6,000,000 common stock and \$4,000,000 preferred stock represent \$10,500,000 cash paid in and \$1,000,000 stock divided to represent profits of the company.

The balance sheet for January 31, 1891, is attested by a public accountant, and is clearly annotated with a full page of explanations. It is as follows:

ASSETS.	
Accounts receivable, merchandise	\$6,505,117.74
Less deductions, 10 per cent.	650,511.77
	\$5,854,605.97
Notes receivable	\$1,752,799.25
Less deductions, 5 per cent.	87,639.95
	1,665,159.30
Cash	632,055.18
Real estate, about 70 per cent. of cost	350,000.00
Machinery and tools, about 10 per cent. of cost	400,000.00
Patterns and models	125,000.00
Patents	\$438,354.29
Less deductions, in addition to previous deductions	100,000.00
	338,354.29
Local company's stock, 40 per cent. of par	346,420.00
Local company's bonds, 70 per cent. of par	1,846,120.00
Manufacturing company's stock, at cost	3,821,017.50
Construction company's stock, at cost	1,022,500.00
United Securities Company's stock, at cost	487,425.00
Consignments	14,096.63
Merchandise inventory	1,476,589.15
Supply department	53,554.68
Common stock, sold but not delivered	231,100.00
Premium on common stock, sold but not delivered	331,100.00
Total	\$18,905,106.70
LIABILITIES.	
Capital stock, common	\$6,000,000.00
Capital stock, preferred	4,000,000.00
Accounts payable, merchandise	374,340.60
Notes payable, collateral	1,537,356.97
Notes payable, unsecured	765,550.64
Mortgage	1,200.00
Accrued wages	4,124.78
Guarantee account (from accrued surplus)	200,000.00
Surplus February 1, 1890	1,085,415.92
Profits for the year	\$3,091,883.67
Premiums on common stock sold	1,500,000.00
Total	\$4,591,883.67
Less dividends paid on preferred stock	254,765.88
	4,337,117.79
Total	\$18,905,106.70
STATEMENT OF SURPLUS ACCOUNT.	
Surplus, February 1, 1890	\$1,085,415.92
Increase for year ending January 31, 1891	4,337,117.79
Surplus January 31, 1891	\$6,022,533.71

Confined in the Allegheny County jail at Pittsburgh are three men under sentence of death for murder. They were formerly employees at the Edgar Thomson blast furnaces of Carnegie Brothers & Co., Limited, at Braddock, and were active participants in the riot which occurred at their furnaces in January last. In the conflict which occurred between the strikers and the men who remained at work a number of the workmen were seriously injured, and one man died from the effects of his injuries. It is for causing the death of this man that three of the rioters are now under sentence of death and will probably suffer the extreme penalty of the law.

After an idleness of two months the Edgar-Thomson Steel Works of Carnegie Brother & Co., Limited, of Braddock, Pa., resumed operations in all departments on the morning of the 21st inst. It is understood that enough orders are on hand to keep the plant running for some time.

Southern Pig-Iron Freights.

The Southern Railway and Steamship Association has issued Joint Pig-Iron Tariff No 14, to take effect April 28. To the leading points the rates are as follows:

To	From		
	Birmingham, Ala., district.	Chattanooga, Tenn.	Sheffield and Florence, Ala., district.
Akron, Ohio	\$3.85	\$3.35	\$3.60
Atchison, Kan.	5.00	5.00	4.55
Chicago, Ill.	3.85	3.60	3.60
Cincinnati, Ohio	2.75	2.25	2.50
Cleveland, Ohio	3.85	3.35	3.60
Columbus, Ohio	3.35	2.85	3.10
Detroit, Mich.	3.85	3.00	3.60
East St. Louis, Ill.	3.25	3.00	2.80
Fort Wayne, Ind.	3.60	3.35	3.85
Kansas City, Mo.	5.00	5.00	4.55
Louisville, Ky.	2.50	2.25	2.75
Memphis, Tenn.	2.00	2.00	1.55
Milwaukee, Wis.	4.25	4.00	4.00
Omaha, Neb.	5.84	5.84	5.84
Pittsburgh, Pa.	4.40	3.90	4.15
Springfield, Ill.	3.90	3.65	4.15
Steubenville, Ohio	4.40	3.90	4.15
St. Joseph, Mo.	5.00	5.00	4.55
St. Louis, Mo.	3.25	3.00	2.80
Terre Haute, Ind.	3.25	3.00	3.00
Toledo, Ohio	3.85	3.35	3.85
Wheeling, W. Va.	4.40	3.90	4.15
Youngstown, Ohio	3.95	3.45	3.70

The rates are on carload lots of not less than 17½ tons of 2268 pounds.

The annual banquet of the American Protective Tariff League will be given at the Concert Hall of the Madison Square Garden, New York, on Wednesday evening, April 29, at 7 o'clock. Distinguished speakers will be present, including Wm. McKinley, Jr., Nelson W. Aldrich and Joseph N. Dolph. James G. Blaine, J. M. Rusk, W. B. Allison, Chas. A. Dana, Nathan Goff and others have been invited and are expected to be present and speak. The committee has determined that the banquet shall be national in its representation, and to that end the furnishings of the tables will be exclusively the products of American industry.

The magnetic concentrating plant of the Croton Iron Mines, near Brewster, is running at full capacity. The ore is roasted in three Davis-Colby kilns, modified so as to burn oil as a fuel. The ore is crushed hot in a Sturtevant mill, screened and passed through six Hoffman concentrators. The tailings are treated on another machine. One of the roasters will be equipped at an early date with a rotary conveyor by the Jeffrey Mfg. Company of Columbus, Ohio, to deliver the roasted ore into the trough elevator, which takes the ore to the Sturtevant mill located on the top floor of the mill. The concentrator plant is now making about 200 tons of concentrates in 20 hours, the greater part being used by furnaces in the Lehigh and Schuylkill valleys in making foundry iron. Some low-phosphorus concentrates are also being produced. Plans are now under consideration for the construction of a large mill capable of handling from 2500 to 3000 tons of rock per day.

The spring meeting of the Iron and Steel Institute will be held on May 6 and 7 at the Institution of Civil Engineers, London.

The steel steamship Griffin, for the Lake Superior Iron Company, was launched by the Cleveland Shipbuilding Company last week. She is 283 feet over all and will have triple expansion engines.

MANUFACTURING.

Iron and Steel.

As we noted in a previous issue, the Carbon Iron Company, at Pittsburgh, have leased the 31 inch three-high plate mill of the Springfield Iron Company of Springfield, Ill., which they will operate in connection with their plant at Pittsburgh. The Carbon Iron Company have recently been awarded several Government contracts, the bulk of them being for San Francisco. In addition to this Government work, the firm will engage largely in the manufacture of boiler plate. The report that the firm intend removing or giving up their plant in Pittsburgh is without foundation. Their business has increased sufficiently to justify them in operating both plants to their greatest capacity.

The rolling mill of the Kittanning Iron Company, Limited, at Kittanning, Pa., has been closed down for an indefinite period, on account of the unsatisfactory condition of the iron market. About 150 men were thrown out of employment. The firm manufacture muck iron exclusively, nearly all of which is sold in the Pittsburgh market.

The Apollo Iron and Steel Company of Pittsburgh, whose plant is located at Apollo, Pa., manufacturers of galvanized and smooth finished iron and steel sheets, are meeting with a large demand for their product. At present the demand is in excess of their capacity, and they propose erecting a new building in the near future, which will be equipped with first-class machinery, for the purpose of largely increasing their output.

On Tuesday, April 14, 130 tons of machinery for the armor plate plant of Carnegie, Phipps & Co., Limited, at Homestead, Pa., arrived at Baltimore. It will probably arrive at Homestead during the present week.

The extensive repairs now being made at the blast furnace of the Belmont Nail Company at Wheeling, W. Va., will probably be completed not later than May 15 next, at which time it is expected the furnace will resume blast.

No. 2 furnace of the Isabella Furnace Company at Etna, Pa., was blown out on April 2, after being in blast since May 28, 1886. The amount of iron made in that time was 297,969 tons of Bessemer, mill and foundry grades.

The Board of Directors of the Tennessee Coal, Iron and Railroad Company re-elected the following officers: President, T. C. Platt; first vice-president, N. Baxter, Jr.; second vice-president, T. T. Hillman; third vice-president and general manager, A. M. Shook; secretary and treasurer, James Bowron.

The entire plant of the Katahdin Iron Works, in the State of Maine, has been purchased by a syndicate, and will be transferred to East River, in Pictou County, N. S., where iron is abundant. Over 300 hands will be employed. Among those interested are Mr. Fraser of New Glasgow, R. G. Leckie of Londonderry and Mr. Sjostedt.

The New Birmingham Iron and Land Company of New Birmingham, Texas, have elected the following officers: Richard L. Coleman, president and general manager, New Birmingham; Richard J. Mahony, vice-president, New York; Robert M. Dix, secretary, New York; Willard Brown, treasurer, New York; Author S. Mahony, assistant treasurer, New Birmingham.

The Spiral Weld Tube Company of Orange, N. J., have received through F. E. Platt of Scranton an order for several miles of spirally-welded pipe for air and steam purposes. The purchasers are Chas. F. King & Co. of Eberly, Pa., who have a contract with the Jeddo Tunnel Company, Limited, of Jeddo, Luzerne County, to drive two tunnels and sink an airway for draining the anthracite mines of Markle Brothers. The company have also received a very large order for 20-inch pipe.

Hamilton Townsend, receiver of the Milwaukee Bridge and Iron Company, Milwaukee, Wis., has filed a statement of the liabilities and assets of the company, showing the former to be \$254,214 and the latter \$287,046.

No. 2 furnace of the Crown Point Iron Company, Crown Point, N. Y., has blown in. While idle the engines were thoroughly overhauled and a set of 18 new boilers put in.

The citizens of Wabash, Ind., have raised a fund to pay the expenses of suing the Indiana Steel Company for \$10,000 damages for violating their contract to locate their plant there.

The work of removing the Newport (Ky.) Rolling Mill to Salem, Va., is to begin at once. The new concern will be known as the Salem Rolling Mills Company, and are capitalized at \$100,000.

The capital stock of the Muskegon Iron and Steel Company, Muskegon, Mich., has been increased to \$200,000.

Llano Improvement and Furnace Company, with capital stock of \$3,000,000, have been organized at Llano, Texas, to develop the town. They have already contracted for the building of a 125-ton furnace to smelt ores, and have placed orders in Liverpool, Philadelphia and Birmingham for iron ore aggregating hundreds of thousands of tons a year. Prominent capitalists in Texas, New York, Pennsylvania and Missouri are interested.

It is reported that a rolling mill will soon be in the course of construction at Cedartown, under the auspices of the Cedartown Land and Improvement Company.

The directors of the Midway Company held a recent meeting at Roanoke, Va., and decided to put the iron works into immediate operation. Work upon the machinery will begin at once, and in a few days the mill will be turning out spikes, &c.

The new furnace at Ironaton, Ala., which has been in course of erection for some time, has gone into blast. This furnace is 60 feet high and 7 feet in crucible. The furnace was originally intended to be a 60-ton stack, but since going into blast has made about 70 tons.

The largest meeting the stockholders of the Sheffield Land, Iron and Coal Company held in their history is in progress in Sheffield, Ala. The following board of directors was nominated by Colonel Cole and unanimously elected: Napoleon Hill, J. C. Neely, Enoch Ensley, S. H. Brooks of Memphis, Tenn.; J. Hill Eakin of Nashville, M. S. Moses of Montgomery, C. A. Collier, J. H. Burke, Atlanta; A. H. Moses, W. Chambers, Philip Campbell, J. R. Crowe, Henry Hobbler, Sheffield. The officers have not yet been elected.

According to report the Harrisonburg Land and Improvement Company of Harrisonburg, Va., have secured a large steel plant.

The Salem Rolling Mill Company have been organized at Salem, Va., with J. J. Bright of Point Pleasant, W. Va., as president, and Frank Barrett of Lancaster, Ohio, as treasurer. The capital stock of the company is \$100,000.

The 50-ton charcoal furnace, located at Rockdale, Tenn., on the Louisville and Nashville branch from Columbia, Tenn., has been leased and was started up on the 11th inst. as a coke furnace by Ohio and Nashville parties, and will hereafter be known as the King Furnace Company. The officers are R. N. King, president, Dayton, Ohio; Walter W. Smith, vice-president and treasurer, of Smith & Vale, Dayton, Ohio; Col. Thomas Sharp, secretary and general manager, Nashville, Tenn., S. A. Short, superintendent. These parties own and operate large ore mines of superior quality near Iron City, Tenn., and intend to use their own ores and produce a superior quality of foundry iron. They also intend the erection of a coke furnace during the present year near their ore banks.

The Swift's Iron and Steel Works, at Newport, Ky., have been sold to representatives of the Newport Rolling Mill Company for \$30,000.

Andrew Carnegie and his partners last week visited the plant of the Allegheny Bessemer Steel Works for the first time since it passed into their hands.

At the works of the National Tube Works, at McKeesport, Pa., 600 men are idle on account of the scarcity of coke to operate the different departments.

The Puget Sound Wire Nail and Steel Company have been organized, with a capital stock of \$200,000, for the manufacture of nails and wire.

The Lochiel furnace of R. H. Coleman, at Lochiel, Pa., shut down on the 16th inst. for an indefinite period. The coke famine was the main cause of the shut down.

The strike at the New Haven Rolling Mill, New Haven, Conn., is drawing to an end, and a good many of the men have returned to work.

The Lancaster Iron Company's plant, at Lancaster, Pa., has been valued at \$42,500, and will be sold at Youngstown at public auction on May 23.

Contracts have been let for portions of the steel plant of the Buena Vista Company, at Buena Vista, Va.

Puddling furnaces are to be added to the Southern Rolling Mill, at Avondale, Ala.

At Pittsburgh last week a decree was made by the courts authorizing the sale of the interest of the late R. C. Gray in the firm of Park,

Brother & Co., Limited, proprietors of the Black Diamond Steel Works, to that firm for the sum of \$559,179.56.

If the water gas plant now being built by the American Tube and Iron Company, at their plant at Middletown, Pa., proves satisfactory it is probable that a similar plant will be placed in their works at Youngstown, Ohio.

No. 2 mill of Cartwright, McCurdy & Co., proprietors of the Enterprise Iron Works of Youngstown, Ohio, which was partially destroyed by fire in February last, has been rebuilt and was put in operation on Monday, April 20.

The Keystone Rolling Mill Company, Limited, at Pittsburgh, are rebuilding their furnaces, and will hereafter use coal as fuel.

As we intimated in our issue of last week, the affairs of the Columbia Iron and Steel Company of Pittsburgh, who recently made an assignment, are being satisfactorily arranged, and it is expected that in a short time the plant of the firm, located at Uniontown, Pa., will be in full operation. A large amount of the indebtedness of the firm has already been provided for, and the balance of the creditors seem disposed to grant the firm an extension of time. Col. J. M. Schoonmaker of Pittsburgh, who was appointed receiver of the firm, has filed his resignation, and it will no doubt be accepted. The personal effects of the Pennsylvania Construction Company, which is an adjunct of the Columbia Iron and Steel Company, were sold at sheriff's sale on April 18.

The Garrison Foundry Company of Pittsburgh have taken an order for a sheet-mill plant for Somers Brothers, can manufacturers, of Brooklyn.

The architectural iron works and foundry of Jas. McKinney & Son, Albany, N. Y., have been greatly improved during the past few weeks. The shop is very busy at present on a great variety of work. Several engines for new steam yachts to be run on the Hudson River this summer are in course of construction. The stairway of the Delaware and Hudson Railroad Company's new building is just being completed. The foundry is now busy turning out the iron floors and stairway for the Mercantile Library in New York City. The Consolidated Car Heating Company are having a great deal of their work done in the McKinney's molding shop.

A cotton-tie mill is to be built at Cardiff, Tenn., by the Cardiff Rolling Mill Company. Lloyd Booth Company of Youngstown, Ohio, will supply the machinery for the plant, the Bass Foundry and Machine Company of Fort Wayne, Ind., the engines, and the Hazleton Boiler Company of New York the boilers. The muck mill, with its ten puddling furnaces and machinery, will occupy a building 50 x 75 feet in size, with two 1's 30 x 70 feet each. The size of the finishing mill will be 50 x 200 feet, and not including the clipping shears, heating furnaces, &c. It will consist of one train of 9-inch rolls, &c., and flat bars from 1 1/4 x 1 inch down to the lightest band and hoop iron.

The Liberty-Columbia iron property, is a fine estate of some 30,000 acres of iron and timber land situated in the North Mountains, on the west side of the Shenandoah Valley, in Shenandoah County, Va., on the waters of Stony Creek, on which were the two old-time charcoal blast furnaces. Not long ago this property passed into the hands of the Liberty Iron Company, composed of Pennsylvania and New Jersey capitalists, who have erected at the old Liberty Furnace a new modern blast furnace of from 65 to 70 tons capacity for the manufacture of charcoal pig. This company have constructed a 3-foot gauge railway and extending over 12 miles from Edinburg station up Stony Creek to their new furnace. They have fully opened up their iron ore mine and accumulated a stock of ore, as well as a large supply of charcoal from their own forests. They will soon be ready to go into blast. The officers of the Liberty Iron Company are R. A. Cook of New Brunswick, N. J., president; H. H. Yard of Philadelphia, Pa., treasurer, and A. J. Hemphill of Philadelphia, Pa., secretary. Joseph Cunningham is furnace manager.

Machinery.

The Campbell & Zell Company of Baltimore have recently received orders for the Zell water-tube boiler of 1250 horse-power for the Chino Valley Beet Sugar Company of Chino, Cal., and 300 horse power for the Brewer & Hoffmann Brewing Company of Chicago, Ill.

The annual meeting of the shareholders of the Roanoke Machine Works will be held at the office of the company in the city of Roanoke, Va., on Wednesday, May 6, 1891.

It is stated that a steel nail mill is to be erected in Dayton, Tenn., by Northern capi-

talists, provided that the city will donate the site for the mill and take stock in the company.

A foundry and pipe factory is to be established at New Birmingham, Texas, at a cost of \$100,000. Active work on the plant will begin at an early date.

The Gulf, Houston and San Antonio Company are constructing new shops at El Paso, Texas, which will employ about 500 men.

The Shendun Machine and Repair Shops, at Shendun, Va., are being rapidly constructed. The foundry will not be finished for a month yet.

Jenkins Brothers of 71 John street, New York, manufacturers of packing and valves, announce that their Chicago branch has been moved from 54 Dearborn street to 31 and 33 North Canal street.

W. J. Johnson of Oskaloosa, Iowa, will establish a foundry and machine shop at Grand Junction, Col.

Lee & Hoff are erecting a new plant at St. Paul, Minn., for the manufacture of boiler-tube expanders, which will be double the capacity of the old plant.

The rapidly increasing business of the Chicago branch house of the B. F. Sturtevant Company of Boston has necessitated their removal to new and much larger quarters, at 16 South Canal street, Chicago. This branch will remain under the control of Foss & Noble, and will form the headquarters for the trade of the Middle and Western States.

A very comprehensive project is that proposed by L. W. Brown, who has organized the Audubon Iron Works, Limited, at New Orleans, La., and is soliciting subscriptions to the capital stock in that city. The plan is to go into the manufacture of sugar machinery for the Louisiana and West India market; to do dock and marine work for ocean and river vessels; and to build ice machinery and cotton oil machinery; the building of breakwaters, lighthouses and iron bridges. The plans are now being prepared.

The Westinghouse Machine Company of Pittsburgh, Pa., report the appointment of a new general agent for the State of Durango, Mexico, in the person of L. F. Wetherbee, with headquarters at the city of Durango.

The Leechburg Foundry and Machine Company of Pittsburgh, Pa., whose plant is located at Leechburg, Pa., have secured an order for a 20-inch bar mill for the Reeves Iron Company of Canal Dover, Ohio. This train of rolls is to be of the most modern design, consisting of ten housings and all necessary rolls and appliances. The total length of the train is 51 feet. Last week the Leechburg Foundry and Machine Company made the first shipment of the cast-iron work for the vertical shaft of the American Sulphur Mining Company, at Sulphur City, La.

The Webster, Camp & Lane Machine Company of Akron, Ohio, have added \$15,000 worth of new tools to their machine shop equipment, and at present contemplate increasing the size of their plant by erecting two or more brick buildings of large dimensions. They are at present employing some 225 men in the manufacture of mining machinery and steam engines.

Negotiations have been successfully concluded between the Staunton Development Company of Staunton, Va., and A. J. Sweeney & Son of Wheeling, W. Va., for the removal of their foundry and machine shops and special departments, such as the manufacture of steamboat machinery, plate glass machinery and structural iron works from Wheeling to Staunton. The new buildings at Staunton will be a foundry building 100 x 100 feet, a machine shop 160 x 100 feet, boiler house and shop 60 x 100 feet, pattern shop 60 x 100 feet, engine house 20 x 100 feet, sheds 20 x 80 feet. The plant will occupy 40,000 square feet of floor space. It is understood that the Development Company make a site of 5 acres free and a cash bonus of \$20,000 an object for the removal.

The Hyer-Sheenan Electric Motor Company have been incorporated at Stafford Springs, Conn., to manufacture motors, governors and other specialties.

Steps have been taken toward the erection of a large factory at West Lynn, Mass., for the projectile department of the Thomson-Houston Electric Works. The projectile department is connected with the United States Works, and when it is in full operation will require between 1200 and 1300 men.

The Florida, Central and Peninsula Railroad Company offer to turn over their foundry business at Fernandina, Fla., to any private concern locating there.

A stock company has been organized to establish a foundry and machine shop at West Point, Md.

The Sterling Barb Wire Company of Joliet, Ill., is considering a proposition to remove to Aurora.

William Tod & Co., founders and machinists, of Youngstown, Ohio, recently received an order from Singer, Nimick & Co., Limited, of Pittsburgh, for a Porter-Hamilton engine, with 36 x 48 inch cylinders and a 25-ton fly wheel. This engine will run at 120 revolutions per minute and develop about 1200 horse-power.

The Buffalo Forge Company of Buffalo, N. Y., having increased the capacity of their foundry, are in a position to undertake heavy job casting orders. They make a specialty of gray iron castings for engines, pumps, &c.

HARDWARE.

Erie Wringer Mfg. Company, Pittsburgh, Pa., advise us that during the month of March they made shipments to Texas and every Southern State, California, Tacoma, Wash., and Oregon, as well as to Brazil and other South American States and Holland, and are now getting out an order for 20 dozen for China.

There is a prospect of having horseshoe nail works at Decatur, Ala. Capitalists have been prospecting there for that purpose.

A company has been organized at Huntsville, Ala., under the name of the Lownes Novelty and Wrench Works, for the purpose of erecting a foundry and machine shop and a plant to manufacture monkey and pipe wrenches. P. H. Lownes of Florida is the owner of the plant.

A brass foundry is to be erected by Nixon & West at Chattanooga, Tenn., to manufacture builders' hardware, journals, &c. The cost of the foundry will be \$30,000.

The Nubian Iron Enamel Company, 18 to 24 Bonnell Place, Cragin, Ill., report a very satisfactory trade for the first quarter of 1891. They feel that, with general trade much duller than last year, their sales of over 30 per cent. in excess of same period in 1890 ought to be very satisfactory. They issue a neat memorandum calendar on a unique stand which they send to all inquirers. External appearances would point to a very prosperous business with them.

The Automatic Knife Company of Middlebury, Conn., are erecting a building 120 x 25 feet, three stories, to manufacture pocket cutlery.

Henry M. Quackenbush, the manufacturer of air and safety guns, has recently erected at Herkimer, N. Y., an addition to his factory. The building, which is just north of and connected with the old shop, is 44 feet by 120 feet deep. It consists of three stories, basement and tower, the latter rising to a height of 130 feet. It is constructed of pressed brick throughout, with dressed brown stone trimmings. But one partition divides the building, and that extends from the basement to the roof, 20 feet from the front. Provision has been made for good light, pure air and comfortable surroundings for the operators. Every floor has running water, sinks, basins and water closets. The windows are large, the ceilings high, and special attention has been given to ventilation. Every floor and room is supplied with Grinnell automatic sprinklers, and electric bells and speaking tubes connect all the business departments of the building. Mr. Quackenbush is spoken of as a self-made man, and while actively employed in business, takes great interest in public matters, to which he devotes much of his time and energies.

MISCELLANEOUS.

The Bellaire Stamping Company of Bellaire, Ohio, manufacturers of stamped ware and sheet-metal specialties, have received from the Staunton Improvement Company of Staunton, Va., an offer of free land for their buildings and a cash bonus of \$60,000 if they will remove their plant to that place. The same firm are also reported to have received an offer from an Ohio town that embraces free land, fuel and \$10,000 in cash. Both offers are now being considered by the firm.

The Sterling Emery Wheel Company will resume the manufacture of emery wheels at the factory at West Sterling, Mass., while a new factory is being built in Ohio to replace the one recently destroyed by fire.

A charter has been issued to the Teluric Company of Morgantown, W. Va., formed for the purpose of mining coal and manufacturing coke. The capital stock is placed at \$50,000, and all has been subscribed. The privilege is also granted of increasing the stock to \$5,000,000. The incorporators are Clarence B. Dillie,

Milton Hirschman, Chas. E. Jolife and E. M. Grant of Morgantown, and E. M. Snyder of Point Marion, Pa. The company have a large body of coal land, through which the extension of the West Virginia and Pittsburgh Railroad will be built.

A new stove foundry is to be built at Bangor, Maine, the firm of Albert Noyes & Co. having united with the stove department of the Bangor Foundry and Machine Company in the establishment of this industry. A stock company will be formed to handle the business, the stock being largely controlled by these two concerns.

It is reported from Waukegan, Ill., that the prospects are good for the removal to that place of the Clinton Wire Cloth Works, now at Clinton, Mass. If they should be removed they will occupy a site near the Washburn & Moen Mfg. Company's new works.

The plant of the Pittsburgh Reduction Company, manufacturers of pure aluminum, has been closed down in order to make necessary repairs. During the month just closed this concern turned out 13,166 pounds of aluminum in ingots, this being the highest production in any one month in their history. When their plant resumes operation again coal will probably be used as fuel instead of natural gas.

W. B. Snead & Co. have been awarded the contract for building the plant for the Cutlery Company at Buena Vista, Va.

A charter has been granted to the Turner-Beard Car Brake Company, incorporated by James W. Bryan, J. O'Hara and others at Covington, Ky., for the purpose of manufacturing a patented brake for cars and locomotives. The capital stock of the company is \$10,000,000.

The New York Sewing Machine and Mfg. Company, with a capital stock of \$250,000, have been incorporated at Richmond, Va. The president of the company is Smith M. Weed; vice-president, Thomas L. Blanton; secretary and treasurer, L. M. Blanton. The directors are Frank A. Wilkinson of the firm of Wilkinson, Geddis & Co., Newark, N. J.; Hon. Smith M. Weed of Plattsburgh, N. Y.; Thomas L. Blanton and L. M. Blanton of Richmond, Va. The capital stock of the company is to be divided into 1000 shares of 6 per cent. cumulative preferred stock; 1500 shares of general common stock; par value of all shares, \$100. This company will continue to carry on the business of manufacturing sewing machines and supplies, as hitherto manufactured under their name in New York. The plant is to be established close to the railroad in East Richmond, will occupy 4 acres of land, and will consist of the following buildings: A main building 400 x 60 feet, with an 120 x 60 feet; boiler and engine house, 40 x 36 feet, with a smoke stack of sufficient height; one detached building, 80 x 60 feet, for japanning and ornamenting with japan ovens. The main building is to be occupied by machinery capable of completing 50 machines per day. The t. will be used for foundry purposes.

The establishment of car works at Beaumont, Texas, is said to be an assured fact.

Word has been received from the manager of the Wire Goods Mfg. Company of Utica, N. Y., that they will have a representative at Henrietta, Texas, in the month of June to look to the proposition made to them to locate their factory at that place.

Main Belting Company of Philadelphia have just completed for a mill in Madison, Maine, what is believed to be the largest driving belt in the world. It is a ten-ply, the width 78 inches and the length 117 feet. The company are in a position to manufacture up to 90 inches wide, and in fact have in stock belts from that width down to the very smallest sizes.

The Damascus Bronze Company, Allegheny, Pa., have recently increased the capacity of three of their melting furnaces from 250 to 500 pounds, their total equipment of melting furnaces now being eight that contain 500-pound pots and three that contain 250-pound pots. Five years ago their works occupied very diminutive quarters. Now they consist of a brick structure 100 x 220 feet and one 25 x 80 feet. In the former it is claimed there is a larger open hearth furnace than in any other brass foundry in the United States. The capacity of the furnace is 3300 pounds per run or heat. Last year the company made and sold over 1,400,000 pounds of bronzes. Its officers are W. T. Paul, president; Frank Scott, vice-president; George A. McLean, secretary; O. W. Foster, treasurer, and D. C. Courtney, superintendent.

Additional machinery, according to report, is being put in at the plow and wagon works of Luker, Davis & Co., at Russellville, Ark. The capacity of the mills, it is said, will also be increased.

TRADE REPORT.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, Chicago, April 22, 1891.

The market seems to have now touched its lowest point. Sales were made the past week under present quotations. It is true that they can hardly be duplicated to-day. Manufacturers display an indifference to business at the lower prices for two reasons: First, they insist that cost is barely realized at the current rate for raw material, and, second, they look forward to an early improvement as the prospects brighten. The course of the market is now being watched most anxiously, and as soon as it shows symptoms of hardening there will be a rush to buy, as stocks are low with both consumers and dealers. An enormous business is expected from the railroads as soon as they feel that they will be safe in ordering new rolling stock or material for repairs, now badly needed. Here and there a house reports improving trade, but as yet dullness is the prevailing condition.

Pig Iron.—More round lots of Lake Superior Charcoal were sold last week to large consumers, who are now buying their season supply, instead of two or three months later, as in previous years. Prices realized were in the vicinity of \$17, Chicago, but it would not be surprising if some of the deals were made on a basis of \$16.50. These transactions have taken such a number of furnace companies out of the market that better prices are now looked for. Charcoal Iron consumers have by no means covered all their requirements, and as navigation is now open relief is expected in shipments to Eastern points. Several prominent makers insist that they will not sell below \$18, and at least one is known to be firm at \$19, although holding a large stock. Good sales of local Coke Foundry have been made to stove manufacturers and general foundrymen, but architectural foundries are not making contracts. The latter are inclined to wait until after May 1 to assure themselves positively with regard to labor troubles. Southern Coke is selling in a very limited way. Silvery and high Silicon Irons are in good demand at \$18 @ \$18.25, Chicago, and makers are very stiff. Southern Car Wheel is remarkably firm in view of low prices for Northern Charcoal, perhaps because production has been heavily reduced. No change in local or Southern Coke quotations.

Lake Superior Charcoal.....	\$18.00 @	...
Local Coke Foundry, No. 1.....	15.50 @	16.00
Local Coke Foundry, No. 2.....	15.00 @	15.50
Local Coke Foundry, No. 3.....	14.50 @	15.00
Local Scotch.....	16.00 @	16.50
Ohio Strong Softeners.....	18.50 @	19.00
Southern Coke, No. 1.....	16.25 @	16.75
Southern Coke, No. 2.....	18.75 @	16.00
Southern Coke, No. 3.....	15.25 @	15.50
Southern, No. 1, Soft.....	15.75 @	16.00
Southern, No. 2, Soft.....	14.50 @	15.00
Southern Gray Forge.....	14.50 @	14.75
Tennessee Charcoal, No. 1.....	18.50 @	18.50
Alabama Car Wheel.....	22.50 @	23.50
Coke Bessemer.....	17.00 @	...
Hocking Valley, No. 1.....	18.25 @	18.50

Bar Iron.—The only transactions of moment reported were in Car Irons, on which competition among manufacturers was so strong that prices are kept private, and hence must have been very low. The general demand is light, the few inquiries coming up leading to business but slowly. Difficulty is still experienced in getting specifications on old contracts, which shows that buyers are in no hurry for deliveries. Local mills quote 1.60 @ 1.65¢, half extras, on jobbers' specifications, and valley mills 1.50 @ 1.55¢ at mill. Bar

Iron from store is held at 1.80¢, full extras, and 1.75¢ for carloads.

Structural Iron.—The Proctor Tower contract has not yet been placed, the reports to the contrary being incorrect. Two and perhaps three large buildings requiring a considerable tonnage of Beams were let the past week, and more are rapidly getting into shape for building. The demand for small lots of Beams is excellent. Prices are unchanged.

Plates, &c.—No large orders have recently been placed in this market, but trade is fair. Mills and stores maintain prices as before, viz.: Nos. 10 to 14 Iron Sheets, 2.65¢ @ 2.70¢; Steel Sheets, 2.80¢ @ 2.90¢; Tank Iron, 2.50¢ @ 2.60¢; Tank Steel, 2.60¢ @ 2.70¢; Boiler Tubes, 55¢ off up to 2½ inches and 60% off on greater.

Sheet Iron.—Manufacturers' agents report numerous inquiries, but buyers wish to order now for delivery in August and September, which does not suit the mills. No. 27 Common is to be had at 2.75¢ @ 2.80¢ at mill for early specifications, and 3.30¢ from store.

Galvanized Iron is quiet, prices are weak, but they are so low at present that only slight concessions are obtained by even the best buyers. Juniata is quoted from stock at 65% off, which is shaded under some circumstances.

Merchant Steel.—Tool steel is fairly active, especially high grade brands. Cheap Steel is moving in small lots to meet the requirements of manufacturing consumers, but no time contracts are now being placed. Dealers quote Tool Steel at 6½¢ @ 8¢ and upward, according to brands. Other quotations unchanged, viz.: Open-Hearth Machinery at 2.30¢ @ 2.65¢, Spring at 2.50¢ @ 2.75¢, Tire at 2.30¢ @ 2.60¢, and Bessemer Bars at 2.20¢ @ 2.30¢.

Track Supplies.—No Steel Rail Orders of consequence have been placed here during the week, but manufacturers are confident that the demand will soon improve and are holding prices firmly at \$31 to largest buyers, with the usual advance for small orders. Some business is reported in Splice Bars, and further orders are coming up. Makers quote 1.85¢ @ 1.90¢ for Iron. No change is noted in Track Bolts, but Spikes are weaker, and 2¢ is now an outside price from mill.

Old Rails and Wheels.—Old Iron Rails are more plentiful, but prices are not giving way. A sale at \$24 delivered to an Indiana mill is reported, which is equal to \$22.75 Chicago. Holders ask \$23 now, but may take a little less on a firm offer. Some business has been done in Old Steel Rails at \$14.50 for mixed lengths and \$16 for long pieces, but the demand is not strong. Old Car Wheels are still very dull, being nominally quoted at \$16.50 @ \$17.

Scrap.—A better movement is again reported in high-grade Scrap. At least 1000 tons of Railroad Scrap has been sold here at prices varying from \$18.50 to \$19.50. Low-grade material is very dull, but some Mixed Steel has been sold at \$11. Dealers are holding their prices higher than consumers are willing to pay, but claim that the supply is not so large as it was. Dealers quote selling prices @ net ton same as last week, viz.: No. 1 Railroad, \$19; No. 1 Forge, \$18.50; No. 1 Mill, \$18.50 @ \$14; Fish Plates, \$21 @ \$21.50; Axles, \$24; Pipes and Flues, \$12.50 @ \$13; Horseshoes, \$18.50; Cast Borings, \$8 @ \$8.50; Wrought Turnings, \$11.50; Axle Turnings, \$13; Machinery Cast, \$12; Stove Plates, \$8.50 @ \$9; Mixed Steel, \$11; Coil Steel, \$15; Leaf, \$16; Tires, \$18.

Metals.—The local demand for Copper has been active all this month, and prices are fairly firm. Casting brands are

quoted at 11.75¢ and Lake at 14.25¢ in carload lots. Spelter is strongly held, prime Western being quoted at 5¢. In Pig Lead dealers report that what looked like low prices last week are now high in comparison. Consumers are afraid to take on Lead, expecting a further decline. The market closes entirely nominal at 3.95¢ asked, but the talk generally is of 3½¢ Lead before bottom is reached.

John McLauchlan, 59 Dearborn street, Chicago, Western manager for the Andrews Bros. Company of Youngstown, has issued a neat little 12-page brochure calling attention to the company's several products and giving the card rates on Bar Iron and Hoop Iron, with tables showing the weight of square, round, flat and other shaped Bars, and the weight per square foot of Sheet and Plate Iron from 1 inch thick up to 30 gauge.

Jones & Laughlins, Lake and Canal streets, Chicago, are adding largely to their warehouse stock in the line of Tank and Sheet Steel and other material used by Sheet Iron workers and tank makers. They have not as yet added Flange Steel and Boiler Tubes. It is believed that they carry the largest stock of Angles and Tees in the country. They keep on hand constantly every size of Angle from 4 inch up to 6 x 6 inches, with all the unequal legs and all sizes of Tees. They are now putting in appliances for handling heavy Plates by overhead carriers, so that one man will be able to take a large Plate from the stock pile to the truck. A new shafting rack has just been built, and lengths up to 20 feet of cold-rolled shafting have been added to the stock. The standard lengths now kept on hand are 12, 14, 16, 18 and 20 foot lengths, with some of the leading sizes in 24-foot lengths. The cold-rolled shafting business has been remarkably active of late, showing considerable movement in the erection of new factories or the improvement of old ones.

Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., April 21, 1891.

The market has not changed very much since date of our last report, but there is a better feeling and, in some instances, slightly better prices. The movement in both Pig and Finished Iron is somewhat more active, showing that stocks in consumers' hands are almost at the point of exhaustion and that buying is a necessity regardless of prices. But there is nothing to indicate that buying is in anticipation of higher prices, although there is a general impression that lower figures are hardly within the range of possibility, but very few are disposed to do more than cover their requirements for the next couple of months. It is becoming evident nevertheless, that stocks, both in first and second hands, are much smaller than usual, and any sudden increase in demand might, for a while, be somewhat embarrassing. Meanwhile, every one in the trade seems to feel hopeful in regard to the ultimate outcome of things, but they are disposed to bide their time rather than aid in starting any premature movement toward higher figures.

Pig Iron.—It would not be within the bounds of strict accuracy to say that the market is unusually active or that prices were better. Nevertheless the market is better—every one in the trade recognizes that. Good Irons are scarce, and they are held with more firmness, while as yet, Southern Irons (Alabama more especially) have not been offered at the low figures which seemed probable a few days ago. Weakness in Pittsburgh and surrounding territory is generally expected to divert Southern Irons to this market, but it has

not been perceptibly felt as yet. Some Virginia brands are selling here at \$14.50 for Gray Forge, \$15.50 for No. 2 and \$16.50 @ \$16.75 for No. 1, and at 25¢ @ 50¢ less for deliveries at such points as Harrisburg, York, Wilmington or Baltimore, although some of the more favorite brands from that vicinity (Virginia) command fully as much in this market as the best Pennsylvania makes. Alabama Irons have not secured any general or permanent standing thus far, and sales are mostly in lots of 2000 to 5000 tons each to consumers who regard price as the chief consideration. Nominal rates for these are \$14, \$15 and \$16 for the three leading grades, but these figures attract very little attention in the present condition of the market, although at 50¢ less it is thought that some business might be done. Standard Pennsylvania brands are developing a good deal of firmness, and it would be difficult to pick up any established make of Iron at less than \$14.75 @ \$15.25, delivered, for Gray Forge, \$16 @ \$16.50 for No. 2 Foundry and \$17.50 @ \$18 for No. 1, price varying according to brand and cost of delivery. For convenience we summarize as follows, price, as already mentioned, varying according to brand and cost for delivery:

Ohio Softeners, No. 1x	... \$19.00	@ \$19.50
Ohio Softeners, No. 2x	... 18.00	@ 18.50
Standard Penna, No. 1x	... 17.50	@ 18.00
Standard Penna, No. 2x	... 16.25	@ 16.75
Medium Penna, No. 1x	... 17.00	@ 17.25
Medium Penna, No. 2x	... 16.00	@
Virginia, No. 1x	... 16.75	@ 17.50
Virginia, No. 2x	... 15.75	@ 16.00
Standard Neutral All-Ore Forge	14.75	@ 15.25
Ordinary Forge Cinder mixed	14.00	@ 14.25
Charcoal Car-Wheel Iron	21.00	@ 25.00

Muck Bars.—Market is becoming more active, but it is difficult to secure prices much beyond those recently ruling, although some good-sized lots have changed hands at \$26.60 @ \$26.65 and \$26.75, delivered. Some holders ask \$27 @ \$27.25 and have confidence that these figures will be realized before long, but in the meantime bids are at about \$26.25 @ \$26.50, delivered, and sales as already stated \$26.60 @ \$26.75. Bids for 500-ton lots declined this p. m. at \$26.50.

Bar Iron.—The general demand is a trifle better, but the absence of large orders is an insurmountable obstacle to any improvement in prices. Mills must have work, and until they are measurably well supplied it is useless to ask an advance. There is a certain amount of business that is always within reach of those who make specialties or have a reputation for quality, but the rank and file have to get their share of business before prices can improve. This is what the trade are all waiting for—first, more business, then more money. Nominal prices are 1.75¢ @ 1.85¢ for Best Refined Iron in the city, and 1.67½¢ @ 1.72½¢ at country mills, but in large lots lower figures have been accepted without much urging on the part of the buyer.

Skelp Iron.—Business does not improve in this department, and from present appearances the demand will not be nearly equal to that of the two preceding years. Asking prices are 1.70¢ @ 1.75¢, delivered, for Grooved, and 1.85¢ @ 1.95¢ for Sheared.

Plates.—The market shows more life than it has done for some time past, but not enough to bring about improvement in prices. They are steadier, however, and concessions not as large nor as frequent as they were a little while ago. The leading mills are kept pretty actively employed, and with the amount of work developing in various quarters manufacturers begin to see better times ahead and are quoting accordingly. General quotations for lots delivered in consumers' yards are about as follows:

	Iron.	Steel.
Tank Plates	... 2.00 @ 2.10¢	2.05 @ 2.20¢
Refined	... 2.20 @ 2.30¢	2.05 @ 2.10¢

Shell	... 2.30 @ 2.40¢	2.40 @ 2.50¢
Flange	... 3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box	... 4.00 @ 4.25¢	3.00 @ 3.50¢

Structural Material.—The position is similar to that mentioned in the preceding paragraph. New work in a small way is coming out more freely, and in other directions matters are in process of negotiation, which will doubtless result in business sooner or later, so that the feeling is more hopeful, although the actual position is not much different from what it has been for some time past. Prices are nominally about as follows for lots delivered in consumers' yards: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2.05¢ @ 2.15¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—The demand is not what was expected, and prices, although not notably lower, can be liberally shaded on a good-sized order. Nominal rates are about as follows:

Best Refined, Nos. 14 to 20	... 3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	... 3.10¢ @
Best Refined, Nos. 25 to 26	... 3.20¢ @ 3.30¢
Best Refined, No. 27	... 3.40¢ @
Best Refined, No. 28	... 3.50¢ @

Common, ½¢ less than the above.
Best Soft Steel, Nos. 14 to 20... 2½¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24... 3½¢ @ 3½¢
Best Soft Steel, Nos. 25 to 26... 3½¢ @ 3½¢
Best Soft Steel, Nos. 27 to 28... 4¢ @

Best Bloom Sheets, ½¢ extra over the above prices.

Best Bloom, Galvanized, discount... @ 65¢

Common, discount... @ 67½¢

Ferromanganese.—Spot lots are scarce and in demand at about \$65 for 80%, but that figure and upward is quoted for May and June shipments. Market strong and advancing; some houses quote \$68 @ \$70.

Steel Rails.—Mills are now pretty well filled up for April and May, with a very fair inquiry for deliveries at later dates. Prices firm, with \$30 as an inside figure for the very best class of orders and \$30.50 @ \$31 for small lots, early delivery.

Steel Slabs and Billets.—Business continues to be very slow, and prices still a matter of uncertainty. Some quote \$27.50 for Slabs and \$27.75 for Billets, seaboard deliveries, and about 50¢ less at points more toward the interior, but very few sales are being made, and it is understood that these are at lower figures than above named. Bids for large lots are hard to secure, and those made are too low to accord with sellers' ideas.

Old Rails.—Prices are entirely nominal at \$23.50 asked for lots delivered in the interior, or \$22.50 for lots at seaboard.

Scrap Iron.—Market steady for good Iron Scrap, but Steel of all kinds is dull, and only saleable at low prices. The usual rates for the different kinds is about as follows: No. 1 Railroad Scrap, \$22 @ \$23, Philadelphia, or for deliveries at mills in the interior, \$22.50 @ \$23, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13 @ \$14 for ordinary; \$15 @ \$16 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$25 @ \$26 for Old Fish Plates, and \$17 @ \$18, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—The demand for small sizes is quite active, and fairly so for large sizes, with discounts steady as follows:

Butt-Welded Black	... 57½¢
Butt-Welded Galvanized	... 50¢
Lap-Welded Black	... 67½¢
Lap-Welded Galvanized	... 55¢
Boiler Tubes, 2½ inch and under	... 55¢
Boiler Tubes, 2½ inch and larger	... 60¢

J. J. Mohr of Philadelphia, selling agent of the well-known Leesport brand of Foundry Iron, informs us that the furnace

is to be blown in this week, and that they expect to turn out a quality of Iron which will still further enhance the reputation of that well-known brand. Most of the other brands handled by Mr. Mohr are so closely sold up that the additional supply from the Leesport Furnace will be quite a relief.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, April 21, 1891.

The weather has been fine the past week and crop reports are favorable. This cannot but have a good effect upon general business, as there is nothing just now so essential to our prosperity as good crops. The most discouraging feature to note at the present time is the numerous labor complications, not only in this locality, but throughout the country.

Pig Iron.—No important change in the situation; business continues light, the demand as a rule still being of a hand-to-mouth character, while prices have undergone but little change. Foundry and Mill Irons continue rather quiet, but there is an increasing inquiry for Bessemer Iron for immediate delivery, and the market is firm. We can report sales of 1500 tons at \$16.00 cash, and sellers are now asking \$16.25 @ \$16.50. Future deliveries can probably be had below the price quoted. There does not appear to be much inquiry for Forge Iron, and there is not much offering and not much to offer for prompt delivery. Furnaces in the Shenango and Mahoning Valleys are still able to do better at home than in this market, while city furnaces are well sold up. Consumption in this district is not large, but it is in excess of production, and as a consequence stocks in first hands are steadily being reduced, and if the Coke strike continues much longer a stronger market is not improbable. Prices may be fairly quoted as follows:

Neutral Gray Forge	... \$14.00 @ \$14.50, cash
White and Mottled	... 13.50 @ 14.00, "
All-Ore Mill	... 14.75 @ 15.25, "
No. 1 Foundry	... 16.00 @ 16.50, "
No. 2 Foundry	... 14.75 @ 15.50, "
No. 3 Foundry	... 14.00 @ 14.25, "
No. 1 Charcoal Foundry	... 23.50 @ 24.00, "
No. 2 Charcoal Foundry	... 21.50 @ 22.00, "
Cold Blast Charcoal	... 16.00 @ 16.50, "
Bessemer Iron	... 16.00 @ 16.50, "

So far as we can learn but few Ore contracts have been made by furnacemen hereabout; notwithstanding Lake Ores are being offered at a considerable reduction on the prices of a year ago, furnacemen are still holding off in the anticipation of a further decline, and they want to keep themselves in position to take advantage of it.

Muck Bar.—The dullness noted for several weeks past continues, and with considerable offering. Prices are weak and in buyers' favor. We now quote at \$26 @ \$26.50, with some small sales reported at \$26.75 and \$27. It is reported that there will be an improved demand as the season becomes more advanced, but the outlook in some respects is not as encouraging as it might be.

Manganese.—There has been a little more inquiry the past week, with sales of domestic 80% at the advance noted in our report of last week; one lot of 100 tons reported at \$66.50, cash, which is an advance of \$2 @ \$2.50 per ton as compared with the prices of a few weeks ago, and there is very little foreign being sold here.

Manufactured Iron.—Business in Finished Iron continues disappointing, but in view of the fine weather which has prevailed for over a week without a break and encouraging crop reports, a better feeling obtains, although this is offset to some extent by labor complications. It is feared that a great many contemplated improvements now

in the hands of architects will not be made this year, in consequence of these labor complications, and there will not be the demand for Finished Iron there would otherwise have been. Prices continue weak, and a desirable order receives considerable attention. We continue to quote first-class Iron at 1.70¢ @ 1.75¢ for Bars; 2.10¢ @ 2.15¢ for Plate and Tank, and 2.80¢ @ 2.85¢ for No. 24 Sheet, all 60 days, 2% off for cash. At valley mills Bars are quoted at 1.50¢ @ 1.60¢, half extras. Skelp Iron continues weak; Grooved is still quotable at 1.65¢ @ 1.67¢, and Sheared at 1.85¢ @ 1.90¢, four months, 2% off for cash.

Nails.—The Cut Nail trade is still reported as being slow for the season, and while prices remain unchanged they are unsatisfactory to manufacturers. We continue to quote at \$1.50 @ \$1.60, 60 days, 2% off for cash on desirable orders f.o.b. at makers' factory. It may be well to state again that prices quoted apply only to large blocks and buyers of smaller lots may expect to pay more; there is always a difference made between large and small buyers, as there is in almost every line of business. Wire Nails slow and prices weak. We quote at \$2.05, 60 days, 2% off for cash. A desirable order might be placed even below the price quoted, as some manufacturers are soliciting business.

Structural Iron.—Business continues light for the season, and the outlook is not as promising as it might be; labor complications have had a discouraging influence, and in consequence it is feared that a good many contemplated improvements will be abandoned or held over until next year. Prices weak, but unchanged: Channels and Beams, 3.10¢; Angles, 2.05¢; Tees, 2.65¢; Steel Bridge Plates, 2.30¢; Universal Mill Plates, Iron, 2.10¢; Refined Bars, 1.85¢ @ 1.90¢.

Steel Plates.—Continue weak in price, and, as will be noted, we have again made a reduction in our quotations, with the exception of Fire Box, which remains unchanged at 4¢ @ 4¢. We now quote Flange, 2.70¢; Shell, 2.50¢, Tank, 2.15¢.

Merchant Steel.—There is no improvement in demand, while prices remain unchanged, but in the present condition of the market, with orders being solicited, there is more or less cutting. Bessemer Tool Steel, 7¢ @ 8¢; do. Machinery, 2.5¢; Crucible Machinery, 5¢; do. Spring Steel, 4¢; Bessemer Spring Steel, 2.5¢; Tire Steel, 2.20¢; Steel Bars, 2.20¢.

Barb Wire.—Prices remain unchanged, as follows: Glidden Painted, \$2.85; do. Galvanized, \$3.40; Four Point Painted, \$2.80; do. Galvanized, \$3.35, in car lots, f.o.b. at makers' works. It was stated in our report of last week that a very desirable order might possibly be placed below prices quoted, which are those agreed upon by the syndicate, but we are informed that the syndicate prices are being adhered to, notwithstanding business is slow as compared with what it has been.

Wire Rods.—There is very little doing, and in the absence of sales prices may be quoted at \$36 @ \$36.50, f.o.b. at makers' mill. The demand has been light for several weeks past, and there does not appear to be much prospect of any immediate movement.

Billets and Slabs.—There is no improvement to note in the demand for Billets, and prices are weak and drooping. We are advised of a sale at \$25, and it is rumored—we cannot vouch for its correctness—that a sale was made at \$24.85. There appears to be but little inquiry, and with manufacturers soliciting business it is not strange that prices are being reduced.

Wrought-Iron Pipe.—There is a fair demand, which it is expected will improve as the season becomes more advanced;

however, there is not the demand there was a few years ago, when natural gas and oil companies could scarcely get as much as they wanted. Prices remain unchanged: Discounts on Black Butt Pipe, 57 1/2%; on Galvanized, 50%; on Black, Lap-Welded, 67 1/2%; on Galvanized, 55%; Boiler Tubes, 2 1/2 inches and smaller, 55%; 2 1/2 inches and larger, 60%; Casing, all sizes, 55%.

Old Rails.—There appears to be no demand for either Iron or Steel Rails, and there is so little doing that it is difficult to give reliable quotations: Iron Rails may be quoted at \$24 @ \$24.25, and Steel at \$17 @ \$17.50, the latter for Short and Mixed lengths.

Railway Track Supplies.—There is an increased demand reported, but prices remain unchanged. Spikes, either Iron or steel, \$2.05, 30 days, on cars at works; Splice Bars, either Iron or Steel, 1.90¢ @ 2¢; Iron Track Bolts, 2.80¢ with Square and 2.90¢ with Hexagon Nuts.

Steel Rails.—There has been no new business reported here of late; the syndicate price, \$30 on cars at works, is still quoted.

Old Material.—There is a better business in the aggregate, but the demand is chiefly for small lots; prices remain about as quoted a week ago. Sales of No. 1 Railroad Wrought Scrap at \$20 @ \$20.50, net ton; Iron Car Axles \$27.50 @ \$28; Cast Scrap, \$14, gross; Car Wheels, \$17; Rail Ends, \$17.50.

The offices of Dilworth, Porter & Co., Limited, proprietors of the Glendon Rolling Mills of Pittsburgh, manufacturers of Boat and Railroad Spikes, have been removed from the Iron Exchange Building, corner of Wood and Water streets, Pittsburgh, to the new German National Bank Building, corner of Sixth avenue and Wood street, in that city.

The offices of F. N. Hoffstot & Co., Iron commission merchants; J. W. Friend & Co., operators of the Eagle Mill; The Clinton Iron and Steel Company, manufacturers of Pig Iron and Plate Iron, and The Wheatland Iron Company, manufacturers of Pipe Iron, have been removed from No. 112 Water street, Pittsburgh, to No. 208 Wood street, in that city. These concerns are all under one management and are practically one concern.

Louisville.

LOUISVILLE, KY., April 20, 1891.

Pig Iron.—Buyers continue to hold off, stating that they will have no orders for future work; they have confidence, however, that they will appear before those now booked have been filled. It is felt that with the increased evidence of excellent crops there will be a greater disposition to buy, and that in the course of the next 30 days same will become quite frequent and lead to large orders. It is known that stocks in the hands of consumers have run unusually low, and that as the Iron market is extremely sensitive to any buying movement, the first indications of same will be followed by heavy purchases, placing Iron on a better footing. Iron is being shipped from Sheffield by water to Wheeling and Pittsburgh, from the Lady Ensley Coal, Iron and Railroad Company. The Iron from Sheffield is well spoken of, and has been in the mixtures of buyers at these points for nearly two years. We quote same as last week:

Southern Coke, No. 1 Foundry... \$14.50 @ \$15.00
Southern Coke, No. 2 Foundry... 13.75 @ 14.25
Southern Coke, No. 3 Foundry... 13.25 @ 13.75
Southern Coke, Gray Forge.... 12.75 @ 13.25
Southern Charcoal, No. 1 Foundry 16.00 @ 17.00
Southern Car Wheel.... 17.00 @ 20.00

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., Cincinnati, April 22, 1891.

Pig Iron.—There has been little if any increase in the volume of business, and no improvement is noticeable in the tone of the market. Gray Forge remains practically at \$10 1/2 ton at Southern furnaces, and some round lots have been sold at this price for early future delivery. It is observed that parties under pressure for money have sold for 25¢ less for spot delivery. There have been inquiries by buyers for the last half of the year, but as a rule agents are not offering to sell, and when they name prices it is at an advance on current figures, some sales having been made for July and August delivery at 25¢ better, although not to any large extent. The melting of Pig Iron is very much restricted by all of the large consumers; in fact, the consumption in this district appears to keep pace with the large decline in production, but there is an undertone of confidence that better things are in store, and the country is apparently in a condition which will cause an increased demand for Pig Iron during the summer. One of the most prominent signs of confidence is that consumers of Lake Superior are now making contracts for large quantities of that material. No immediate improvement in the Pig-Iron market is probable, but it may come when least expected. Quotations are unchanged, but as regards other than the leading grades of Southern Iron, and especially as regards Charcoal Iron of all kinds, they are merely nominal. Current quotations are given below:

Foundry.

Southern Coke, No. 1	\$15.00 @ \$15.25
Southern Coke, No. 2	13.75 @ 14.00
Southern Coke, No. 3	13.50 @ 13.75
Ohio Soft Stone Coal, No. 1	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2	15.50 @ 16.50
Mahoning and Shenango Valley	17.50 @ 18.00
Hanging Rock Charcoal, No. 1	21.00 @ 22.00
Hanging Rock Charcoal, No. 2	19.50 @ 20.50
Tennessee and Alabama Charcoal, No. 1	16.50 @ 17.50
Tennessee and Alabama Charcoal, No. 2	17.00 @ 18.00

Forge.

Gray Forge	12.75 @ 13.00
Mottled Neutral Coke	12.50 @ 12.75
Car Wheel and Malleable Irons.	
Southern Car Wheel	18.50 @ 20.50
Hanging Rock, Cold Blast	20.00 @ 22.00
Lake Superior Car Wheel and Malleable	19.50 @ 20.50

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth St., St. Louis, April 20, 1891.

Pig Iron.—Looking over the situation it is difficult to discover anything that can be termed encouraging. Prices are lower, and while it is true the demand shows some improvement, this is readily traceable to the special prices made rather than any immediate want of Iron. Consumers have been buying in limited quantities for the past four months, and now an inspection of their stocks shows a smaller quantity of Iron on hand than for a long time past. Furnaces seem to have accepted the situation as it presents itself and are disposed to meet the buyer half way. The time is sure to arrive, however, when the furnaces will call a halt on accepting less than a certain figure, and consumers will begin to look around with a view to replenishing their stocks. When this point is arrived at, which by conservative business men is placed in the late summer or early fall, an entire change of front is anticipated. Consumers who find the market hardening and with light stocks of Iron on hand will quite likely become anxious, and this anxiety is expected to be accompanied by a rush to buy, followed by a better market and higher prices all around. This, in a few words, is the opinion of those in a

position to judge, and carries with it a conviction that will, if heeded, prove valuable. The week under review has been an improvement over the one immediately preceding so far as sales are concerned, but prices, as stated above, have been shaded to encourage buying. The volume of business compares favorably with the same period of last year, and with a number of new concerns which have recently located here it is more than likely the quantity of Iron consumed for the balance of the year will show some increase over last year. Prices as quoted herewith are representative of to-day's market, f.o.b. cars St. Louis. We quote:

Southern Coke, No. 1 Foundry.	\$15.50 @ \$15.75
Southern Coke, No. 2 Foundry.	14.50 @ 14.75
Southern Coke, No. 3 Foundry.	13.75 @ 14.00
Grav Forge.	18.25 @ 18.50
Southern Charcoal, No. 1 Foundry.	17.50 @ 18.00
Southern Charcoal, No. 2 Foundry.	17.00 @ 17.50
Missouri Charcoal, No. 1 Foundry.	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry.	15.00 @ 15.50
Ohio Softeners.	18.00 @ 19.00

Bar Iron.—Demand shows more activity than for some weeks past. Mills have withdrawn the inside prices which have been a disturbing element in the market for some weeks, and are now asking from 1.65¢ to 1.67½¢, delivered on cars at East St. Louis. The local demand shows some improvement and jobbers seem determined to hold 1.80¢ @ 1.85¢ as bottom.

Barb Wire.—The market continues in the improved condition noted last week. The demand from jobbers has been very heavy, the improved condition of the weather enabling outdoor work to be carried on with vigor, and the drying up of country roads has caused quite an increase in the demand from rural points. Prices are firmly adhered to, as follows: Painted, 2.95¢; Galvanized, 3.50¢; carload lots 10¢ @ cwt, less than above prices. Some complaint is heard from jobbers charging that they are being discriminated against in the matter of prices, claiming that mills are quoting the country trade the same prices as the jobbers, thus cutting the latter out entirely.

Wire Nails.—For some reason Wire Nails are a drag on the market, and mills are kept busy stocking them up as fast as they are turned out. Prices are weak, and \$2.15 @ \$2.20 from mill is the basis on which orders are now accepted.

Cleveland.

CLEVELAND, April 20, 1891.

Iron Ore.—The local market is still devoid of special features beyond the efforts being made by the Oremen to reduce some of the items of expense to the vesselmen, so that carrying rates may be reduced to the minimum. The Ore dealers are fully determined upon doing all in their power to make the cost to the furnace men as light as it can possibly be made. As was said in these quotations several weeks ago, this effort at a reduction in the furnace men's expenses extends to the railroads that carry the Ore from the mines to the upper lake ports. The Gogebic people seem to have every reason to complain, being charged 70¢ a ton for a haul of only 40 miles. There seems to be no likelihood whatever of an early opening of the Ore market. The sales reported in *The Iron Age* several weeks ago are the only ones that appear on the surface beyond the reports covering a few sales based upon so many conditions as to make the information concerning them of no consequence.

Pig Iron.—The market exhibits no outward signs of activity or interest. In efforts to find any new features correspondents find many of the local offices

closed and the dealers away from the city. Consumption does not seem to be very large and there have been few, if any, sales; certainly none of any consequence. Speculation regarding Bessemer Iron is based upon a \$16 @ \$16.50 rate, but no sales are reported. It seems a little strange, in view of the fact that prices are already at rock bottom, that buyers should cling so tenaciously to the policy of supplying only immediate necessities, and these but meagerly. It is certainly safe to assume that prices will go no lower. Indeed, dealers, with scarcely any exception, look for a better market next month.

Old Rails.—About \$24 is the ruling price for Old American Rails, with only an occasional sale reported. Stocks are reported to be limited.

Scrap.—Prices are not quite so firm and the demand is slight. No. 1 Railroad Wrought is worth \$20, Cast Scrap about \$14 and Old Axles \$27.

Manufactured Iron.—Here, too, the market is weak, and only about 1.60¢ is being paid for Common Bar, with a limited inquiry everywhere reported.

The Cleveland Iron Mining Company have issued a neat little pamphlet giving analyses and descriptions of their Ores. A table presents the average of 1890 analyses of hard and soft non-Bessemer and Bessemer Ores.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date April 20, 1891, say: The situation in the general Iron trade is certainly such that it is very difficult, indeed wellnigh impossible, to give any interesting report of the condition of affairs, as so very few changes occur. As a contrast, however, to the Chicago market, as reported last week, we have seen no break in the price of Lake Superior Charcoal Iron, such as occurred there. The usual small amounts of Iron have been placed, although we learn of no large contracts having been made. Navigation is just on the point of opening, and while the vessel owners at the various lake ports have agreed to hold back until May 15, or nearly a month, at the same time the line steamships will soon commence the movement of Pig Iron, with their other freight, from the Upper Lake region. The Coke strike is being observed by all foundrymen with interest, and while it seems probable that the operators may win by May 1, the quality now produced, as well as the quantity, must be most unsatisfactory to both operators and to the few consumers who have received "strike" Coke. In a general way trade certainly looks as dull as it ever has, at least this year. Prices are about as they have been, and are as follows:

Lake Superior Charcoal, all numbers.	\$18.50 @ \$19.00
Lake Superior Coke, Bessemer.	18.00 @ 18.50
Katahdin (Maine Charcoal).	23.50 @ 24.00
Lake Superior Coke Foundry, all ore.	18.00 @ 18.50
Ohio Blackband (40 per cent.)	18.00 @ 18.50
Southern No. 1.	16.25 @ 16.75
Southern Gray Forge.	14.75 @ 15.25
Jackson County (Ohio) Silvery.	18.25 @ 18.75

Financial.

Wild speculation in wheat, the doubtful future of the Western Traffic Association and the financial problems that confront the Treasury Department at Washington are among the features that have engaged attention during the week. Gold exports excite less apprehension, and the continued promising outlook for crops, together with favorable railroad returns, tend to offset circumstances that are distinctly adverse. The most radiant cloud in the horizon, if reports from Europe can be trusted, is the prospective demand

throughout the Continent for American wheat. The Paris *Mercuriale des Halles* says the wheat outlook in France is that the crop will be from 25 to 30 % below the average. On Monday last wheat in the New York Produce Exchange rose to \$1.25 per bushel, "dollar wheat" becoming a fact. Prices have climbed steadily two or three weeks. A year ago May wheat was quoted 97¢ @ bushel. Two weeks ago it was \$1.10, and this week May wheat was quoted \$1.24½, July \$1.19½, December \$1.14½, sales being on an enormous scale, reaching the aggregate on a single day of over 22,800,000 bushels, or more than the entire visible supply. Flour rose to \$6.60 for fine Minneapolis brands, an advance of 60¢ within a week. Corn was weak, at an advance of 6¢ during the week. Navigation on the great lakes has been fully resumed by the opening of the Straits of Mackinaw, and the reopening of the Erie Canal May 20 will complete the course of inland navigation for the whole country. Secretary Foster has in mind a plan to extend as many as possible of the 50,000,000 4½ % bonds, due September, 1891, for a number of years at 2 % if holders will agree. The programme is supposed to be the refunding of \$20,000,000 to \$30,000,000 in 4½ % bonds into 2 % under two or three successive calls; the reduction of the bank deposits by about \$10,000,000 and the suspension of further redemptions of 4½ per cents in advance of their maturity, is supposed to be in the programme. The non attendance of Mr. Gould upon the called meeting of the Western Traffic Association was construed as meaning positive hostility, foreshadowing disruption. Chairman Walker now announces a meeting in New York May 6, of which important results are predicted. A Madrid dispatch says the draft of the new commercial treaty between Spain and the United States has been concluded. Under the new convention America will obtain a kind of zollverein with the Spanish Antilles. Her wheat, beans, flour, lard, petroleum, manufactured products and machinery will enter practically free of duty. As anticipated, the Lehigh Valley Railroad ignores the decision that tolls must be reduced, as ordered by the Interstate Commerce Commission, and it is understood that the coal operators will pay, as usual, under protest, pending the action of the courts. All signs point to a strike in the bituminous coal region May 1.

Stocks have become active and strong. Reports concerning financial trouble in Paris were contradicted. Several failures among speculators on the Produce Exchange had little effect. A decline in prices caused by exports of gold to Germany was soon recovered. The coal carriers became strong on the belief that protracted litigation would affect revenues less than a reduction of tolls. A marked improvement on Monday began in the industrial stocks, Chicago Gas, Sugar and Cordage leading; but it soon extended to the remainder of the list. One feature was a sharp rise in Lake Shore. In some respects the market was the best for several weeks.

Stocks on Tuesday had a timely reaction.

United States bonds were quoted as follows:

U. S. 4½s, 1891, registered.	101½
U. S. 4½s, 1891, coupon.	101½
U. S. 4s, 1907, registered.	122
U. S. 4s, 1907, coupon.	122
U. S. currency 4s, 1895.	113

The Bank statement showed a loss in reserve of \$1,293,100, the surplus now standing at \$4,319,850. Legal tenders increased \$986,200, reflecting the return flow of currency from the West. Loans were contracted \$1,689,700.

Money was a little firmer. Time loans were made at 4 % for 60 to 90 days;

4½ for four to five months and 5 for six to seven months on good collateral, while for good ordinary security the rate was 5½ to 6% for all dates. Commercial paper was also in better demand. Bar silver quoted in London at 44½ per ounce nominal. Commercial silver bars, 97 to 97½. Sterling posted rates are \$4.86 @ \$4.89. London intelligence indicates a hardening of money rates and a demand for gold at the Bank of England which might lead to a further advance in the discount rate. The tone in business circles is rather more cheerful, partly influenced by fine weather. The rapid advance in the price of cereals and the improved agricultural prospects encourage a hopeful feeling. Among dry goods jobbers collections were better, and the financial condition of trade was felt to be very satisfactory. The low cost of cotton remains as a bearish factor in the minds of buyers, and it is not improbable that some modifications may be made in prices on that account. In print cloths there was a fractional decline. Foreign goods are firm. As far as dating is concerned the majority of importers are stiffer than they have been for a long time. The trade is gradually waking up to the fact that something has got to be done before long to limit credits. Exports of manufactured cottons since January 1 approach \$4,000,000 in value, doubling the quantity compared with last year. A full business has been done in refined sugar at low prices, with prospects of a better basis. The miscellaneous grocery business has been on the whole very fair. Cotton deals have been on a depressed market. A comparison of last week's clearings of 59 cities made with those for 1890 shows the gross exchanges, which amounted to \$1,142,728,263, only 0.5 per cent. less.

Exports of merchandise from New York for the week, \$6,358,970, and since January 1 \$109,105,000, against \$105,910,000 for same time last year. Imports ditto, \$18,988,000, and since January 1 \$167,601,000, as compared with \$162,731,000 last year. Specie exports, according to the Custom House report, were \$3,933,658, and since January 1 \$24,500,000, against \$10,967,000 for the same time in 1890.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, April 22, 1891.

American Pig.—The market has been dull during the week under review. We print elsewhere an interesting report, from a gentleman high in authority in the Iron trade of this city, on the position of the Southern furnaces. This report shows that the stocks are low. As reflecting the position of the most important producers in this section, we may state that the stock of the Thomas Iron Company, which was 16,800 tons on January 24, is now about 4700 tons. Since the company make about 3500 tons weekly, their present stock is equal to less than ten days' product. Northern brands are quoted \$17 @ \$18 for No. 1, \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Iron sells at \$16.50 @ \$17.25 for No. 1, \$15.75 @ \$16.25 for No. 2, and \$14 @ \$14.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—The market continues lifeless on Spiegeleisen and very quiet on Ferromanganese, which is selling in jobbing lots at \$64 @ \$64.50. The majority of buyers of Ferro have not yet reconciled themselves to the rise, and are holding off for everything immediate requirements.

Billets and Rods.—Very little has been done in the East, large buyers being well covered in Billets, which are quoted

\$27.50 @ \$27.75 at Eastern makers' mills. Rods are dull at \$39 at tidewater. There is nothing doing in foreign material.

Steel Rails.—During the past week the market has been very quiet, no transactions of any size having been closed by the Eastern mills. The latter, however, are now in excellent shape so far as orders for the near future are concerned. Up to the 1st of this month three mills, in which we include Cambria, had orders on their books for about 250,000 tons, out of which they had delivered up to that time about 85,000 tons. They have certainly taken more orders this month than they will deliver, so that even if they make no further sales in April they will probably enter May with from 175,000 to 200,000 tons of Rails to be rolled. Since the greater part is for early delivery the majority of this group of mills are in very good shape for the next two months. The two large Western concerns, Illinois and Carnegie, have done so little work during the first quarter, having delivered only about 60,000 tons up to April 1, that they have a good deal before them, in spite of their enormous capacity. It is estimated that the two entered this month with about 225,000 tons of Rails to roll. Of course the pressure from the roads of the Northwest for track material comes a little later. On the whole, therefore, the Rail mills regard the near future with very little anxiety. They are firmly holding at \$30.75 @ \$31 at tidewater, and it is pointed out that all of them have a strong interest in maintaining prices, since they have during the days of anxiety and doubt entered a considerable aggregate of work, as yet undelivered, with the understanding that should a break occur the purchasers are to get the benefit of it.

Manufactured Iron and Steel.—During the past two weeks contracts for a number of buildings have been placed, which have been on the tapis for a considerable period. These orders are all secured for the leading Pittsburgh mill, the aggregate being about 4000 tons of structural material. It is estimated by good authority that the tonnage of the work now on the market, or soon to make its appearance, aggregates about 12,000 tons. Some of the Western Bar makers are declining orders for May delivery on the ground that the strike of the miners may stop their mills. We quote Angles, 1.95¢ @ 2.10¢; Sheared Plates, 2¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2¢ @ 2.15¢ for Tank, 2.3¢ @ 2.6¢ for Shell, and 2.5¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock.

Rail Fastenings.—We quote: \$1.90 @ \$1.95, delivered, for Spikes; 1.75¢ @ 1.80¢, for Fish Plates, and 2.75¢ @ 2.90¢ for Bolts.

Old Material.—The market is lifeless, with no transactions of any consequence reported.

Dana & Co., Iron and Steel Merchants, remove their offices this week to the London and Lancashire Fire Insurance Company's Building, 57 and 59 William street, third floor.

Coal Market.

Prices and other conditions in the Anthracite trade are unchanged in essential particulars. Production, which has been regarded as the main regulator of the market, is identical with that of the previous week and with the aggregate since January 1 for the current year and 1890 when compared. Stocks at tidewater afford no index of actual supply, heavy reserves being maintained at interior

points. So far as the expected action of the Lehigh Valley Railroad upon the decision of the courts ordering reduced tolls was expected to affect trade, the future is now determined. On the 20th inst., the date fixed for a reduction, no change took place in any respect, the action of the courts being practically ignored. Individual miners will pay as heretofore, but under protest, expecting that the amount overpaid will eventually be refunded. Operators will be disappointed if consumers longer hold off for lower prices, the assumption being on their part that the bottom has been touched. Steam sizes are still in request and firmly held, while domestic sizes are neglected and weak. Broken, Egg and Stove are \$3.60; Chestnut, \$3.35, net, f.o.b.; Pea is \$3 and Buckwheat \$1.85 @ \$2. Lehigh fancy brands are a shade higher than the foregoing.

The Coal sales agents met on Tuesday, but made no change in prices. The output for May was fixed at 2,500,000 tons, against 2,000,000 tons for the current month. The output for the week was 594,000 tons. Production for the year, 9,059,651 tons; excess over last year to date, 1,773,462 tons. The Reading tonnage for the week was 170,000 tons; Pennsylvania tonnage for the week, 260,615 tons of Coal and 35,483 tons of Coke. The falling off in Coke shipments this year as compared to last year foots up 761,682 tons.

The Bituminous Coal operators of Indiana have decided to resist the eight-hour day movement announced for May 1, and refuse to pay for mining before the Coal is screened. They have also decided that the wage schedule for the year beginning May 1 shall be on the basis prior to this year—that is, 5¢ less for the summer months than for winter, and that the rate shall be 15¢ per ton less than that paid for Block Coal.

A dispatch from Scottdale says that the labor leaders have received information that the Frick Company have engaged the services of 500 experienced miners from the Punxsatawny Coal fields, with the intention of putting them to work in their various mines.

Metal Market.

Pig Tin.—Liquidation in connection with the attempted "bull" movement that came to grief last week was continued up to Tuesday of the present week, on which day sales were recorded at as low as 19.40¢ for current month delivery. On the decline very fair purchases have been made for trade and consumptive account, but speculative interest has been and is tame at the moment, evidently requiring the aid of a London movement to restore confidence. Unsold stocks on the spot are heavy, and it is estimated that there will be upward of 2000 tons at the end of the month, and that fact seems to offset the relatively lower prices ruling here, in the speculative arena at least. Hence there is no desire to buy, except against "puts" that show a very fair margin of profit. Purchases against that class of privileges resulted in sales on Tuesday at 19.55¢ for April and May delivery, but April was sold at 19½¢ on Wednesday, and spot stock in ton lots could not have been moved at a better price. Out-of-town orders have been filled at 19½¢ @ 19.60¢ for single ton parcels and 19.65 @ 19.75¢ for smaller quantities.

Pig Lead.—Comparative inaction on the part of consumers and anxiety to sell by some smelters have combined to force prices still lower. To all accounts no considerable quantity of Lead has been disposed of at the reduced cost, and it is the general report that consumers manifest the same degree of indifference that was shown when prices were ½¢ above

the present level. At this writing lots of 50 tons or over are openly offered at 4.15¢ for prompt delivery and that price was quoted also for shipments to the end of the month of May. A 50-ton lot was sold at 4.10¢ to make base price for bullock, but less than 4.15¢ does not appear to have been reached on regular transactions.

Copper.—No change in the condition of the market for this metal is visible. Consumers' purchases are unimportant and the demand reflects no tendency on their part to deviate from the cautious policy followed since the beginning of the year. The offering from first hands is without sign of any pressure to sell, however, and outside lots at concessions are few and far between. The popular quotation for Lake Superior product is 13¢. Arizona Ingots remain at 12½¢ @ 12½¢, and on Casting Copper the range is 11½¢ @ 11½¢, according to brand.

Spelter.—Prices have further receded and the market is dull at the decline; consumers, in fact, seem to follow in line with the policy that governs current operations in Copper and Lead, leaving a weight of supplies on smelters' hands that is apparently burdensome. Prime Western is readily obtained at 4.95¢, in carload lots. Sales have been made at as low as 4.90¢, which price, it is said, would still be accepted for some brands.

Antimony.—The market remains quiet and prices are still unsettled, with a leaning in buyer's favor. Hallett's is quoted at 15½¢ @ 15½¢, LX at 16½¢ and Cookson's at 16½¢, in wholesale quantities.

Tin Plate.—Heavy arrivals have caused some pressure of spot stock upon the market and that, in connection with free offers of lots afloat and to be shipped, has given values, particularly for Cokes, another downward turn. The modified cost, however, appears to have awakened interest among buyers in some quarters, and more liberal sales were noted the past few days than for some time previous. Quotations for large lots on the spot are as follows: Coke Tins—Penlan grade, IC, 14 x 20, \$5.20; J. B. grade, do., \$5.27; Bessemer do., \$5.25; Siemens Steel, \$5.35. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75; Siemens Steel, IC basis, \$5.85 @ \$5.95; IX basis, \$6.85 @ \$7. IC Charcoals—Melyn grade, \$6.25; for each additional X add \$1.50; Allaway grade, \$5.85 @ \$5.95; Grange grade, \$6; for each additional X add \$1. Charcoal Terne—Worcester, 14 x 20, \$5.62½; 20 x 28, \$10.50; M. F., 14 x 20, \$7.25; do., 20 x 28, \$15; Dean, 14 x 20, \$5.15; do., 20 x 28, \$10.25; D. R. D. grade, 14 x 20, \$4.90; do., 20 x 28, \$9.80; Mansel, 14 x 20, \$5; do., 20 x 28, \$10; Alyn, 14 x 20, \$5; do., 20 x 28, \$10; Daffryn, 14 x 20, scarce; do., 20 x 28, \$10.50. Wasters—S. T. P. grade, 14 x 20, \$4.75; do., 20 x 28, \$9.62½; Abercane grade, 14 x 20, \$4.70; do., 20 x 28, \$9.50.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, April 23, 1891.

There has been about 1/6 advance in prices of Scotch warrants and 1/3 in Cleveland warrants during the week, and the market shows better form. Operations have not increased to any remarkable extent, however, the advance being due chiefly to the oversold state of the market and

the difficulty experienced by operators on the bear side in securing warrants to cover their short accounts. The bulk of supply is well held. A quantity of warrants changed hands privately at prices much above present open quotations. Stocks in warrant stores have undergone a further large increase. There are now 52 furnaces blowing in Scotland. Cleveland advices note a better demand in that section. Latest sales of warrants were at 44/ for Scotch, 39/ @ 39/1½ for Cleveland, and 48/7 for Hematite.

Pig Tin prices declined to £88.17/6 for prompts, under the influence of reports of a breakdown in the bull speculation in America, but have since recovered a portion of the loss, although trading has been moderate. Eastern shipments prove to be about the average and not as heavy as expected in some quarters.

Copper has averaged somewhat lower, under the influence of a plentiful supply of warrants and cheap sales of American Matte. The increase of 612 tons in stocks here and 241 tons in visible supply during the first half of the month also served to check speculation. Large arrivals have been met by heavy deliveries. Recent sales of furnace material include 600 tons Anaconda Matte, argentiferous, at 9/9 ½ unit; 300 tons ditto at 9/10½; 950 tons Montana Matte at 10/, and 450 tons ditto at 9/10½.

Tin Plates are rather quiet, but more interest is taken in deliveries after June. Makers controlling 298 mills have resolved to stop their works during July, with a view to improving the position.

Arrol Brothers, proprietors of the Germiston Iron Works, Glasgow, have failed; liabilities heavy. The heavy Steel trade in all sections remains quiet.

Scotch Pig Iron.—The demand for makers' brands still runs light, and prices are somewhat irregular.

No. 1 Coltness, f.o.b. Glasgow 64/
No. 1 Summerlee, " " 61/
No. 1 Gartaberrie, " " 60/
No. 1 Lanarkshire, " " 49 6
No. 1 Carnbroe, " at Leith 62/6
No. 1 Shotts, " Ardrossan 55/
No. 1 Glengarnock, " Ardrossan 50/
No. 1 Dalmellington, " 50/
No. 1 Eglinton, " 50/
Steamer freights, Glasgow to New York 2/; Liverpool to New York 10/.

Cleveland Pig.—Purchases for consumption moderate, but prices firmer, in sympathy with improvement in warrants. Makers quote 39/ for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—Makers are firmer in their views, but sales are moderate and the demand is tame. Makers quote 50/ @ 51/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—Some improvement noted in the demand and prices are firmer, with English 20% quoted at 97/6, f.o.b. shipping port.

Steel Rails.—There has been a fair business, and the market is steadier. Heavy sections quoted £4. 10/ @ £4. 12/6, and light sections £5 @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Very little doing in this line, and prices are barely steady at £4. 7/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—The demand is moderate, but sellers offer with more reserve. Bessemer, 2½ x 2½ inches, quoted at £4. 7/6 @ £4. 10/, f.o.b. at N. W. England shipping point.

Steel Slabs.—Sales are light, and the demand is without improvement. Bessemer quoted at £4. 7/6 @ £4. 10/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—There is a very fair demand and prices are steadier. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

Scrap Iron.—The market is steady, with some improvement in the demand. Heavy Wrought quoted at £2. 5/ @ £2. 7/6, f.o.b.

Crop Ends.—Trade moderate and prices without change. Bessemer quoted at £2. 15/ @ £2. 17/6, f.o.b.

Tin Plate.—Buyers and sellers still apart. Business is of moderate volume. We quote, f.o.b. Liverpool:

1C Charcoal, Alloway grade.....	18/6 @ 18/9
1C Bessemer Steel, Coke finish.....	17/ @ 17/3
1C Siemens.....	17/3 @ 17/6
1C Coke, B. V. grade.....	16/9 @ 17/
Charcoal Terne, Dean grade.....	16/6 @ 16/9

Manufactured Iron.—There have been no changes in prices in this line and business is slow. We quote, f.o.b. Liverpool:

£ s. d.	£ s. d.
Staff. Marked Bars	8 10 0
" Common "	6 5 0 @ 6 7 6
Staff. Blk Sheet, singles	6 17 6
Welsh Bars (f.o.b. Wales)	5 15 0 @ 6 0 0

Tin.—Demand moderate at the close and the market barely steady. Straits quoted at £89. 7/6, spot, and £89. 12/6 for three months' futures.

Copper.—Market steady at the decline, but quiet. Merchant Bars quoted at £51, spot, and £51. 7/6, three months' futures. Best Selected, £56. 10/.

Lead.—Demand is slow, and prices are easy at £12. 7/6 @ £12. 10/ for Soft Spanish.

Spelter.—A moderate business, and prices steady at £22. 10/ @ £22. 12/6 for ordinary Silesian.

New York Metal Exchange.

The following sales are reported:

THURSDAY, April 16.

10 tons Tin, June	19.85¢
10 tons Tin, August	19.90¢
30 tons Tin, May	19.80¢
20 tons Tin, June	19.85¢
10 tons Tin, May	19.85¢
20 tons Tin, July	19.85¢
10 tons Tin, August	19.75¢
25 tons Tin, April	19.75¢
10 tons Tin, April	19.75¢
(Sellers' right to double)	

FRIDAY, April 17.

20 tons Tin, April	19.70¢
175 tons Tin, April	19.60¢
10 tons Tin, April	19.50¢
(With seller's right to double)	
20 tons Tin, September	19.55¢
10 tons Tin, June	19.65¢

MONDAY, April 20.

30 tons Tin, April	19.40¢
20 tons Tin, April	19.45¢

TUESDAY, April 21.

25 tons Tin, April	19.55¢
25 tons Tin, May	19.55¢

HARDWARE.

Condition of Trade.

WITH THE PREVALENCE of good weather in many parts of the country, and the advance of the season, there is some increase in the volume of business and a better feeling prevails. Reports from a number of manufacturers and merchants indicate that, notwithstanding the disposition to complain of the sluggishness of trade, the volume of business thus far in 1891 compares favorably with last year. But, on the other hand, there is no doubt that in certain lines business has not been as good as was expected, and more or less disappointment has been experienced. The tone of the market in prices has not changed, the weakness which has characterized certain lines still continuing. The trade are evidently indisposed to purchase beyond their immediate requirements. There are, however, indications of the return of a more confident feeling.

Chicago.

(By Telegraph.)

Business is slowly picking up in Shelf Hardware, but it is falling off in Heavy Hardware. Jobbers in both lines are earnestly hoping that the weather will soon become settled so that the country roads can dry up. Rains have lately been so heavy that it will require at least a week of clear weather to put the roads in good condition. Salesmen continue to send in encouraging predictions of future business, which they are sure will be realized as soon as the means of communications are restored to their usual condition.

Staple goods are of course in very light demand and will continue so until outdoor work can be actively prosecuted. Prices are not notably changed. The situation in Stove Boards is being watched with considerable interest. The association are known to have given up the store in New York and their future is regarded as very uncertain.

St. Louis.

(By Telegraph.)

The Hardware trade continues to improve, and the month of April will be fairly satisfactory to all concerned. Sporting goods are in good demand. Copper goods are moving freely, and prices are firm. The Agricultural Implement trade has been unusually large this season, and still continues in fair proportion. Wire Nails are weak and slow to move at \$2.25 to \$2.30, from store. Cut Nails are weak, in sympathy with Wire Nails, and the trade in this commodity is absolutely lifeless. Garden Tools of all kinds are selling freely. There are no special changes in

prices to report. Collections are reported satisfactory.

Notes on Prices.

Cut Nails.—The market continues sluggish and devoid of special feature. There is no material change in the prices demanded by the mills, who are also refraining from making further concessions in price. Quotations are on the basis of \$1.60, at mill, for large lots with 35 or even 30 cent average. Small lots from store in New York are unchanged, \$1.75 to \$1.85 for Iron and Steel, with the usual concessions on larger lots.

Chicago, by Telegraph.—Steel Nails are no higher than they have been, though quite an effort is being made among the manufacturers to advance prices. They are still available at \$1.60, at Wheeling, or \$1.75, on track, Chicago. The demand is a little better and is perceptibly increasing in localities heretofore given over entirely to the use of Wire Nails. Jobbers quote \$1.85, from stock, with 5 cents off for car-loads, but these prices are shaded.

Wire Nails.—No improvement is yet to be observed in the Wire Nail market, prices continuing low and somewhat irregular. The principal buyers, apparently, are not in immediate need of Nails and are deferring placing orders, in the hope of a further shrinkage in quotations. Prices are on the basis of \$2.05 to \$2.10, f.o.b. at mill, for round lots, smaller parcels being quoted at \$2.15 to \$2.20, some manufacturers holding at \$2.25. Small lots from store are held at \$2.30 to \$2.35, with 5 cents off for carloads.

Chicago, by Telegraph.—Business is a little better with some manufacturers, who not only report more inquiries but fair sales. Few orders just now are larger than a carload or two, but it is hoped that these are the dropping preceding a shower. Prices are, however, not low enough yet to meet the views of the heavy buyers, who are holding off in apparent concert to endeavor to force the market lower. At present all influences seem to favor the buyers, but it is a question whether they will be able to buy much cheaper than they now can. Attention is now being given to quality, as Wire Nails of an inferior grade have been sold quite extensively and have hurt business. Jobbers quote \$2.30, from stock, with 5 cents off for carloads, but these rates are shaded under some circumstances.

Barb Wire.—The demand is at present reported only fair, but stocks in the hands of jobbers are large and ample for their requirements for some time. The fact that these stocks were purchased at lower figures than are now ruling enables holders to undersell the manufacturers, and as a result prices are slightly irregular.

Chicago, by Telegraph.—Manufacturers are now beginning to keep up with their orders, and a week or two will test the

strength of the market. As they have stocked the jobbers at low prices the latter can undersell them and control them if the schedule rate is strictly adhered to. The demand from retailers is very light at present, and will not improve until farmers are able to get to making fence. Prices are unchanged.

Lead Pipe, Sheet Lead, &c.—The following reduced list prices are announced by the manufacturers of Lead Pipe, Sheet Lead, &c., under date April 18. These prices are subject to the usual discount:

	Per pound.
Lead Pipe.....	\$0.07
Block Tin Pipe.....	.37½
Sheet Lead.....	.07½
Tin-Lined Pipe.....	.15

Old Lead in exchange is quoted 34 cents per pound. The weakness of the market in Pig Lead is the reason for this reduction.

Wrought-Iron Pipe.—The new price on Wrought-Iron Pipe does not appear to have materially increased the volume of business. The change, in fact, simply put the price of Pipe at figures at which it had for some time before been selling in an irregular way. Notwithstanding the material reduction made the market is not characterized by any especial strength and it is understood that in exceptional cases concessions are still made.

Plastering Trowels.—In the price-list given in our last issue of specialties put on the market by E. H. Wayne, 422 Commerce street, Philadelphia, by a typographical error the Handy Plastering Trowels were quoted at \$2 per dozen instead of \$3 per dozen, the correct figure. Our readers will please note the correction.

Family Grindstones.—The Cleveland Stone Company, Cleveland, Ohio, quote their line of Family Grindstones at discount 33½ per cent. from their list, which we are advised is considerably lower than the lists of other manufacturers.

Wheels.—The American Wheel Company have made some reduction in the price of their Wheels to their largest customers. The reduction is not the same on all kinds, but is understood to be heaviest on odd sizes and patterns.

Glass.—The meeting of Glass manufacturers, held at Chicago on April 15, resulted in an advance being made in the price of Glass from 10 to 15 per cent. by those present. It is stated that the representation at the meeting included the Western Association and the United Glass Company; including, in fact, those who were interested in the proposed American Window Glass Company last fall, together with those who would not join the American Company at that time.

There was no reorganization of the American Window Glass Company, but the manufacturers present at the meeting having become tired of the low prices which have lately been ruling, agreed to sustain an advance.

The price agreed upon for carload lots is: First Bracket, 80 and 5 per cent. discount; All above, and Double Strength, 80 and 10 cent. discount. Quotations are made by a large jobber in this city who handles Pittsburgh Glass only of 80 and 10 per cent. discount on carload lots and 80 and 5 per cent. discount on less than car lots. The stocks in jobbers hands at the present time are too large, and the time too short since the change in prices was made to decide to what extent they will be maintained. Factories that are overstocked with Glass and in urgent need of money will doubtless be obliged to dispose of their present stock before they blow out in June, to meet current expenses, and will be willing to make low prices for cash. After they start up in September they can meet the demands of the market and accumulate stock if desirable. It remains to be seen whether factories which are financially able will sustain the advance.

French Glass remains unchanged in price, on a basis of 75 and 10 per cent. discount, with an additional 5 per cent. discount when 50 boxes are ordered and taken in any calendar month.

Plate Glass is quoted from Pittsburgh at the following prices:

American, 50 and 10 and 5 per cent. discount.
Imported, 60 per cent. discount.

Returned Goods.

MANY MANUFACTURERS will heartily approve the position recently taken by Sargent & Co. in regard to returned goods. Not infrequently Hardwaremen are disposed to take advantage of the consideration with which they are treated by those from whom they purchase their goods, and to return for slight and insufficient reason, and often merely to serve their convenience, goods which have been duly purchased. Sargent & Co., however, have taken a new departure in this matter, and in a notice to the trade, which bears date April 20, they say:

Returned Hardware is of comparatively little value to the manufacturer, for the reason that however carefully it has been handled it is not in a fit condition to resell as fresh goods.

Therefore we respectfully inform the trade that after this date no goods sold by us will be taken back or exchanged unless on account of error in shipping or fault in manufacture.

This action, it will be observed, is another step in the direction taken by some manufacturers of Tools in withdrawing warrants on account of attending abuses. It will meet with general approval on the part of producers of goods, and it is not unlikely that it will be followed by similar action on the part of other manufacturers.

Trade Items.

MANUFACTURERS MAY be interested in the announcement made on another page by the Star Mfg. Company, Halifax, Nova Scotia, in regard to their facilities for manufacturing Hardware articles and their desire to make arrangements for the manufacture of some patented specialties. Their works, we are advised, are too extensive to be fully em-

ployed upon the lines of manufacture in which they are now engaged, and they are therefore desirous of making such an arrangement as is outlined in their advertisement. As manufacturers of the genuine Acme Skates, the company are widely and favorably known, and doubtless are in a position to manufacture other goods to advantage.

THE READING HARDWARE COMPANY, at its recent annual election, re-elected Mathan Harbster, president, Wm. M. Griscom, vice-president, and H. C. England, treasurer.

C. F. ZIEGLER, formerly of Junction City, Kan., is now in the real estate business at 163 Randolph street, Chicago. He desires this to be understood by the trade, inasmuch as manufacturers and merchants are still sending price-lists, &c., which are of no service to him, as he is out of the Hardware business.

OWING TO CONTINUED ill-health Madison R. Goff, Richford, Vt., offers his Tin, Stove and Hardware business for immediate sale. The location is referred to as an excellent one, Richford being a growing and prosperous village.

THE TRADE WILL observe among the advertising pages the illustration of the Barry Parlor Door Hanger, which is now manufactured by Central City Bolt Company, Syracuse, N. Y. This Hanger, the trade will remember, was on the market for several years and obtained a recognized position, but owing to a change in the affairs of the manufacturers its production was temporarily suspended. Within the past two years the Central City Bolt Company of Syracuse have resumed the manufacture and improved the Hanger, putting it on the market in its present form.

T. C. WARD, manufacturers' agent, Rochester, N. Y., is sending the trade a Metallic End Hanger, in colors, relating to Cliff's Sure Winner Seat Springs; R. H. Wagon and Torsion Pole Springs. A picture of the head of a spirited horse is given, named Sure Winner, the pedigree of which is recorded as, out of Best Crucible Steel by skilled labor.

STANDARD LOCK COMPANY, 12 South Fourth street, Minneapolis, Minn., advise us that their Johnson's Patent Knob Lock is meeting with success. The rosette or escutcheon constitutes the Lock. There is a tumbler that fits the inside of the rosette, in which there is a small opening through which the "dog" drops into a slot in the tumbler, thereby fastening the knob securely. It can be applied to work already upon a house, as well as upon new work, as it simply takes the place of the other rosette, without cutting or marring the door.

Electrical Goods for Hardwaremen.

WE HAVE RECEIVED reports from a large number of Hardwaremen in regard to their success in carrying Electrical Goods in stock. Most of these reports indicate that this is a desirable line for the Hardware trade to take up and carry in a regular way, but some of our correspondents refer to the difficulties and annoyances connected with the sale of the goods. On the whole, however, the reports are very satisfactory. A number of our correspondents advise us that they are intending very soon to add these goods to their assortment. It will also be observed that several of the writers refer to the fact that there is a satisfactory profit on this line. But in order to place the matter

fully before our readers we give below a number of extracts from these letters. In some of them it will be seen that our correspondents refer in a practical way to the advantages and disadvantages connected with trade in these goods, and from many of them those who are not handling the goods will be able to derive suggestions which may be of service.

CONNECTICUT.—As to Electrical Goods, we are selling a great many of these and find it profitable, as they are easy to sell. We carry in store a stock of Bells, Batteries, &c., and as we are selling builders all the Hardware for a house, it pleases us and them to do the electric work, as they then have no necessity for looking up the matter. One of our salesmen puts in all of this work, and as he is nearly always able to suit our convenience in doing it, the work really costs us nothing. Any bright young man can soon learn the business and can make money for his employer. We certainly consider this a very profitable part of our business.

WISCONSIN.—About three and one-half years ago I received my first invoice of Electric Bells, &c., and have kept a stock of them since. I consider it a good paying line and it works in nicely with Hardware. It is a line that requires some push and study, as electricity is a deep subject. In bell hanging we simply get a very formal introduction to it.

ILLINOIS.—The progressive men in all lines are the successful men, and this is especially true in the Hardware line, a line in which modern ideas, appliances and art are being inculcated at a remarkably rapid rate. Any merchant can sell staple goods and goods his father sold, and on which through competition the profit is infinitesimal almost. There are several lines that every live Hardware merchant should carry which we regret to note are not generally carried. Bicycles, a line which pays a good profit, should be grasped at once by live merchants who desire to keep in the lead. Now, while the application of electricity is in its infancy there are many supplies in that line that every merchant should have. He should make himself an educating medium for his customers, and take hold of electrical supplies. They are mostly made of metal and belong to his trade. Take hold now while they are in their youth and grow with the new found branch, and thereby keep at the head and derive a fair profit from the goods. In these times of competition merchants that are progressive must grasp the new specialties.

NEW YORK.—We have handled for some years a full line of Electrical Door Bells, Batteries, Push Buttons, Insulated Wire, Gravity Batteries and Zinc to supply a demand from our trade. We instruct one of our young men in the tinshop to put in Bells and such work. We find that we can do it on a profit. From numerous catalogues we furnish any other electrical supplies needed. We find quite a difference in prices among dealers, and one should be posted as to quality and values.

CONNECTICUT.—Am much pleased with Electric Door Bells.

MICHIGAN.—In Electrical Goods we handle and put in House Bells and have an increasing trade. It affords good profit and gives good satisfaction. We are not oversupplied with catalogues of these goods and are not drummed for the trade much. We are inclined to think the trade is in its infancy with us but are willing to learn.

TENNESSEE.—We have been carrying Bicycles and Electric Bells. As to Electric Bells we can say that our success

was not so encouraging as in the case of Bicycles. We did some business but not what we ought to have done. We find that there are a great many people who think there is some mystery about Electric Bells, and on this account prefer to purchase from a regular electrician. Also, when they get out of order it is necessary to send a man to see them, which is more or less trouble. We had no particular difficulty on this last score, however, for we carried a good brand of goods and the complaints were very few, but the volume of trade was not large. The percentage of profit was, however, satisfactory.

CONNECTICUT.—We consider our Electrical Department one of the important parts of our business. Hardly a new house or a public building goes up where we furnish the trimming that we don't do Electrical work of some kind. We also have quite a trade in supplies. These take up very little room and are nice goods to handle, always commanding a good profit. Our Hardware stores are all carrying Bicycles, in fact, almost every line of trade seems to represent some make of wheel. Therefore, until this is regulated we do not anticipate a large business in them.

INDIANA.—We have handled Electrical Goods with good success for three years and have a growing trade. We think this line comes in nicely with Hardware.

ILLINOIS.—I have for some time carried a line of Electrical Goods, which find ready market, no modern house being complete without a full system of Electrical Calls, Alarms, &c.

WEST VIRGINIA.—I have had no experience in selling Electrical Goods, but think if they could be put up in simple and convenient shape for retailers to handle they would be a good and profitable line. The only objection that presents itself to me at present is that the seller would have to attend to putting them in place, as the ignorance of the average buyer of all things mechanical, and especially electrical, would exclude him from doing his own work.

Joseph Rodgers & Sons' Agency.

NEGOTIATIONS by which F. & W. Clatworthy, who contemplate retiring from business, transfer the agency of Joseph Rodgers & Sons, Sheffield, England, to Alfred Field & Co., 93 Chambers street, New York, have been consummated, to go into effect May 1. Announcement of this change will be made in circulars dated April 30. F. & W. Clatworthy also have sold to Alfred Field & Co. their entire stock of goods of Joseph Rodgers & Sons' Cutlery and W. K. & C. Peace's Grass Hooks, Scythes and Straw Knives. They will also have the use of an office in the building of Alfred Field & Co. for the settlement of their outstanding accounts, where they will be glad to see their friends at any time. In announcing this agency Alfred Field & Co., under date April 30, will issue the following circular:

Referring to the above announcement, we desire to say that we have arranged for a special department for this agency, and like our predecessors, F. & W. Clatworthy, in addition to soliciting orders for importation, we shall carry in stock a full line of Messrs. Rodgers' manufactures, consisting of Pocket and Table Cutlery, Razors, Scissors, Erasers, &c., and will be prepared to fill orders for the same promptly.

Joseph Rodgers & Sons', Limited, write us as follows:

"We, on our part, can assure you of our hearty co-operation in helping to extend our trade in the United States, always provided that we are not required to reduce, in any way, our standard of quality, which we intend to maintain."

Price-lists as issued by F. & W. Clatworthy, October 1, 1890, and the terms therein stated, will hold good. We shall be glad to send on application one of these price-lists to any party not having one.

We also beg to inform the trade that we have been appointed sole agents for the sale of Grass Hooks, Scythes and Straw Knives manufactured by W. K. & C. Peace of Sheffield, and shall carry in stock a full line of these well-known goods.

The withdrawal of the Messrs. Clatworthy from the Hardware trade, with which they have been for so long a time identified, will be very generally regretted, as these gentlemen have many friends and are held in high esteem. While they will be missed as representatives of the lines of goods which have for so long a time been identified with them, they will receive the congratulations of the trade for the success which they have attained. The fact that the agency is to be with Alfred Field & Co. will, however, be regarded by the trade with satisfaction, assuring, as it does, the continued efficient representation of the goods by a house widely and favorably known.

Owing to their acceptance of the Rodgers agency, Alfred Field & Co. are closing out their stock of Wostenholm's Pocket Cutlery and Razors and Butcher's Razors; they will be glad to send stock memorandums to any one wanting these goods.

File Catalogue.

G. & H. BARNETT, Philadelphia, Pa., proprietors of the Black Diamond File Works, issue a handsome catalogue 11 $\frac{1}{2}$ x 15, containing over 100 pages, relating to Black Diamond Files. It is bound in cloth, with beveled edges, printed on fine quality paper, with clear and distinct full-size cuts. Each left-hand page has Black Diamond File Works printed across its face, while the right-hand pages are devoted to illustrations or descriptive matter. In the preface they say:

In these days, when catalogues are "thick as leaves in Vallombrosa," it may seem to some unnecessary that another one—and that one on so well known an article as a File—should see the light. We have desired, however, in the following pages to illustrate such a variety of shape and cut, both of File and Rasp, as to make the book a requisite in the store of the Hardwareman, while to the mechanic often in search of some special shape or cut of File for his particular purpose, we hope these illustrations will prove of no less permanent value.

It is also stated that they have just completed extensive additions to their buildings, machinery and special manufacturing appliances, which will enable them to increase their output to 1500 dozen Files per day. Fac-simile representations of labels are given in colors, and are noticeable for the distinctness with which the size and quantity are shown. Illustrations of cuts of Files and Razors; also of sections, showing the shape and dimensions of File Steel in most general use, are of much interest. Over 250 illustrations of different sizes and styles of Files are shown, many of which the regular Hardware trade is not familiar with. The work will be of

great usefulness to the Hardware merchant, as he would be unable to give information to customers who call for special cuts or irregular styles of Files unless a complete reference book of this character was at hand.

Protection for Retailers.

THE MATTER OF PROTECTION for retailers is one in which the retail Hardware, Stove and House-Furnishing trade in New York and vicinity are deeply interested, judging from the tenor of a large number of letters received by the president of the association. They all express interest and great sympathy in the movement and indicate willingness to do all in their power to further the work. The practice of wholesale houses selling goods, at retail, and selling them to dry goods, furniture and other retailers who are not in these lines of business, are the causes of complaint. The points are strongly brought out in the correspondence referred to, and from which we make some extracts which show the manner in which the question is regarded by the trade. A Hardware and Stove dealer, Fulton street, Brooklyn, after stating that some action should be taken by the retailers for their relief, goes on to say:

It is nearly impossible to make any profitable sales in Stoves, Tinware, Hollow Ware, Heaters or Furnaces. I think if the trade could get together and come to some agreement to buy only from wholesale houses that are willing to protect our interests, and not sell to those dry goods and furniture stores that are cutting into our trade, it would make a vast difference in our receipts.

Another Brooklyn firm, who have had an arrangement with other retailers similar to that proposed by this association, write in regard to this matter:

We have talked it up a number of times with different men in our line of business, and they have agreed with us. We have stopped dealing with four firms for selling Stove Pipe and Stoves to dry goods stores on our street. This has killed our Stove trade entirely.

It seems to be not an uncommon occurrence for dealers in the vicinity of New York to buy Stoves from others than New York dealers. A dealer at Oyster Bay, N. Y., gives his reasons for doing so as follows:

I buy quite a few Stoves in Pennsylvania and at Albany, N. Y., and one reason for so doing is because I have had parties that I buy of retail Stoves here in sight of my place of business. The wholesale people adopt prices together and form combinations, and I have thought for some time that something should be done for us.

A merchant of Southold, N. Y., expresses himself in regard to the wholesaler antagonizing the interest of the retailer in this way:

Some means ought to be taken to prevent, if possible, the manufacturers and wholesale dealers selling at retail. They rely upon us to handle their goods, and yet they injure our business by selling to our own customers at near wholesale prices.

A Jersey City firm, referring to the same matter, say:

There is no doubt but that the wholesale houses have in numberless cases worked in direct opposition to the men

who have advanced their interests and recommended their goods.

There are doubtless many of our readers in other parts of the country who will sympathize with our New York retailers in their attempt to correct a serious and growing evil. We shall be glad to have the expression of their views in regard to the matter. Perhaps some of them can aid in the movement by suggestions as to how it may most successfully be carried on.

Price-Lists, Circulars, &c.

WILEY & RUSSELL MFG. COMPANY, Greenfield, Mass.: Patent Screw-Cutting and other labor-saving Machinery and Tools. Their 1891 price-list contains illustrations of their line of goods, prominent among which are Dies and Taps, doing their work at a single cut, as in their Lightning and Green River Screw Plates, and Bolt Cutting Machines for hand and power. Attention is directed to several new Bolt Cutters (Screwing Machines) and Pipe Threaders, which are illustrated and described for the first time in this catalogue.

E. C. STEARNS & CO., Syracuse, N. Y.: McGuire's Star Thimble, illustrations showing interior construction, manner of crating, ceiling and register plates. It is stated that the sale of the Thimble for the year 1890 was over 50,000.

WIRT & WAIT MFG. CO., Independence, Mo.: All Iron Hose Reels. Those are made in nine sizes and in three styles, each style having capacities of from 100 to 300 feet of hose. They also manufacture a Reel to supply the demand for a good, strong and cheap article.

HENRY DISSTON & SONS, Philadelphia, Pa.: Pocket edition price-list. Saw Mill Tools, Keystone Saw, Tool, Steel and File Works. In addition to Saws and Saw Tools, the manufacturers state that they make to order all sizes and styles of Springs, Cutting Implements, Tools, and, in fact, everything that can be made from sheet steel; and that their facilities for doing such work are unsurpassed, estimates being furnished upon application. Special attention is directed to the description of their improved method of casting steel ingots or compressed steel.

ERIE SPECIALTY MFG. COMPANY, Erie, Pa.: Walker's Improved Cork Pullers, Lemon Squeezers, Cigar Cutters, Beverage Mixers, Ice Shaves, Ice Grips, Cork Screws, Tobacco Cutters, &c. They state that as their business is under the direct management of E. Walker and their works are fitted up with the latest improved special machinery, operated by experienced workmen, they can guarantee strictly first-class work.

CHAMPION TOOL AND HANDLE WORKS, Evart, Mich.: High Grade Lumbering Tools. Wrought Peavies, Steel Socket Peavies, Solid Socket Peavies, Split Socket Peavies, Mill Cant Hook, Wolverine Cant Hook, Champion Cant Hook, Excelsior Cant Hook, Ready Cant Hook, Champion Timber Grapple or Lug Hook, Champion Hand Spikes, Pike Poles, Champion Skidding Tongs, Swamp, Loading and Rollway Breaking Hooks, Logging Dogs, Standing Board Plates, Loading Blocks, Rafting Dogs, &c. Attention is directed to their patent Crate, holding half-dozen tools each, insuring such protection to the goods that it is stated they invariably reach the purchaser in perfect condition and also effect a saving in freight, as tools boxed or crated are classed under a lower tariff. This line of tools is referred to as being very complete. They have recently added to their Machinery an improved upsetting machine, and also have in contemplation several other labor-saving machines. They advise us, however, that their Hooks are all hand hammered, as they find that in certain parts of their tools hand hammered steel is more serviceable.

Arrangement of Stores.

THE ACCOMPANYING engravings relate to the retail department of the Hardware establishment of Basche & Co., Baker City, Oregon, to whom we are indebted for the descriptive particulars concerning it. Besides carrying a complete stock of Hardware, they also have a

entrance are artistically arranged, showing to the best advantage the various lines of goods, each in its season. The single counter in the store is at the right of the entrance. Heating Stoves and Ranges are arranged through the center of the room, with racks for various goods at the rear. The shelving is arranged for Guns and Shelf Hardware on one side

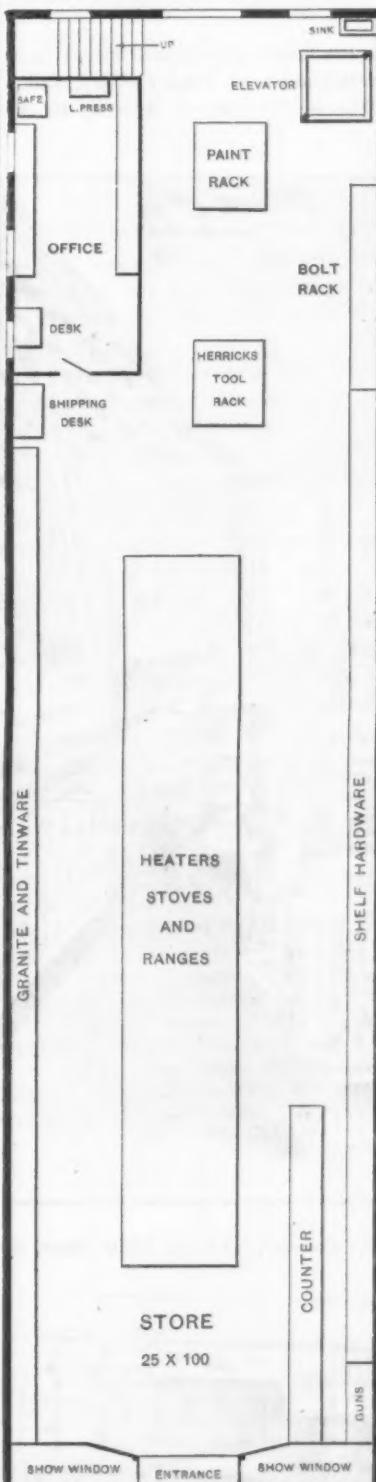


Fig. 647.—Diagram of Store of Basche & Co., Baker City, Oregon.

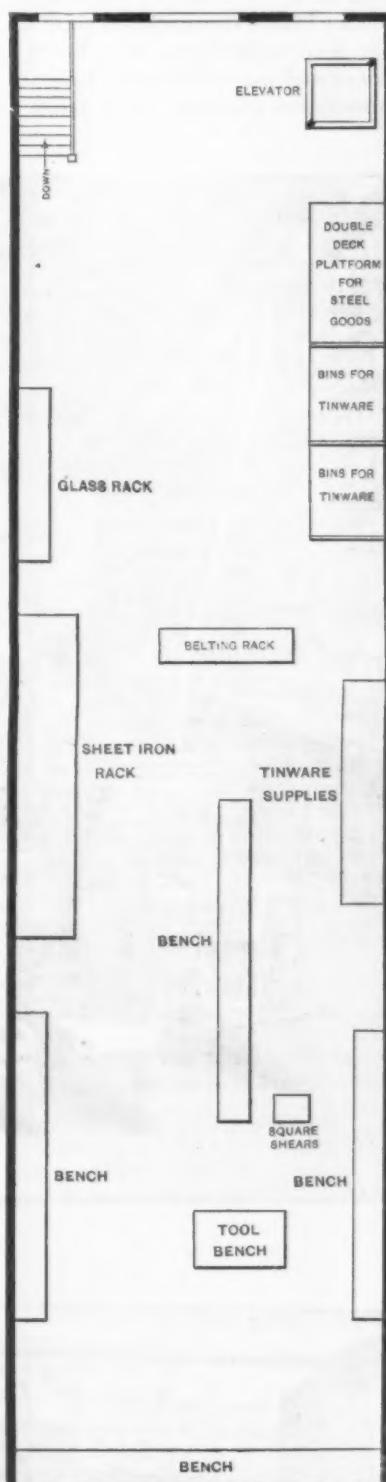


Fig. 648.—Second Story of Basche & Co.'s Store.

full line of Tinware, House Furnishing goods, Agricultural Implements and Wagons. The illustrations give a clear idea of the general arrangement of the store, also some particular methods employed in handling certain lines of goods. The building is 25 x 100 feet, of which they occupy two floors. The store, the diagrams of which are given in Figs. 647 and 648, show the first and second story.

The show windows on either side of the

and Granite and Tinware on the other. The elevator and sink are at the extreme back on the right-hand side; the office and stairway on the left. Fig. 649 gives an excellent idea of the appearance of the store, looking from front to rear. The entire side wall space is occupied with shelving, all parts being accessible by traveling ladders on both sides. The counter, which is 16 feet in length, has the entire back part divided into 44 com-

partments about 5 x 7 inches, with separate doors of sheet iron, japanned, and arranged for Hand Saws, with the grade, make, number of teeth to the inch, &c., labeled on the doors as shown in Fig. 650 with large bins underneath for full packages. The labels for the doors were supplied by the Saw manufacturers. The three show cases on the top of the counter are used, the first for fancy Tools of all kinds, the second for Plated Ware, and the third for Pocket Knives, Revolvers, &c. The first section of shelving (which is not shown in the illustration Fig. 649) has a space 5

tom six bins 5 inches wide by 8 inches high and 12 inches deep, used for Buckshot, Pistol Balls and Bar Lead. Over these bins are small drawers 3 inches high, 6 inches wide and 12 inches deep, used for Caps, Primers and small Gun repairs. To the left of these drawers is a self-weighing Shot case, over which is a full assortment of Cartridges arranged in the shelves; also Gun implements and sporting goods.

We would direct particular attention to the arrangement of Table Cutlery, which is in the next section of shelving to the

ple board of Table Cutters, &c., and also Fig. 652, which gives a more detailed view. Basche & Co refer to this device as being the result of 12 years' experience in the business. After having tried many ways of displaying this class of goods, they decided upon the device shown in Fig. 653. It is neat in appearance, and will admit of the article being immediately removed to show to the customer, and as quickly returned. The clasp is held in position by the same kind of drawer pull as is used throughout the store on drawers in the shelving.



Fig. 649.—Counter, Shelving, Show Cases, &c.

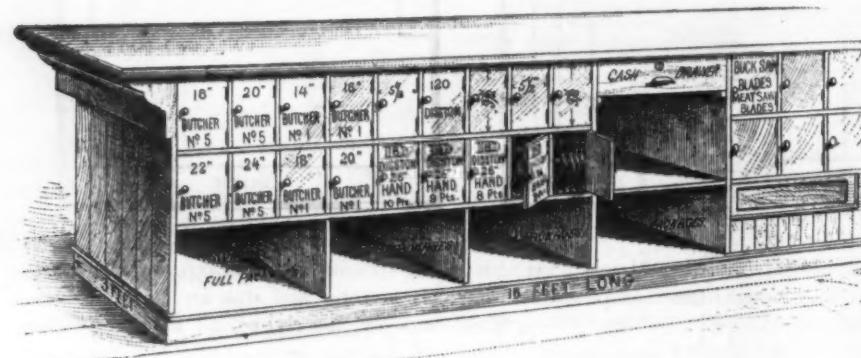


Fig. 650.—Rear of Counter, Arranged for Saws.

feet wide by 12 feet high, arranged for the display of 50 or 60 Guns. The second section, which is about the same size as the first, has to the front and on the bot-

left, and can be seen in the general view of the store, as illustrated in Fig. 649. A better idea of which may be had, however, from Fig. 651, which shows a sam-

The next section, as shown in Fig. 654, is without shelving, leaving an open space about 2½ feet above the ledge, 5 feet long. This space is devoted to a platform scale, wrapping paper, &c., the scales being used for weighing Nails. The Nail bins begin here and extend to the Bolt case in the rear. There are 36 of these bins which are intended to hold two kegs each. The rest of the shelf sections have large drawers immediately above the ledge, arranged for Horse Brushes, Curry Combs, &c. Above these drawers, arranged in order, are Rim and Mortise Locks; Pad, Chest, Trunk and Drawer Locks; Builders' Hardware, such as Chain and Foot Bolts, Sash Locks and Lifts, Hinges, Butts, &c. The next two sections are illustrated in Fig. 655.

The Screw case shown here consists of

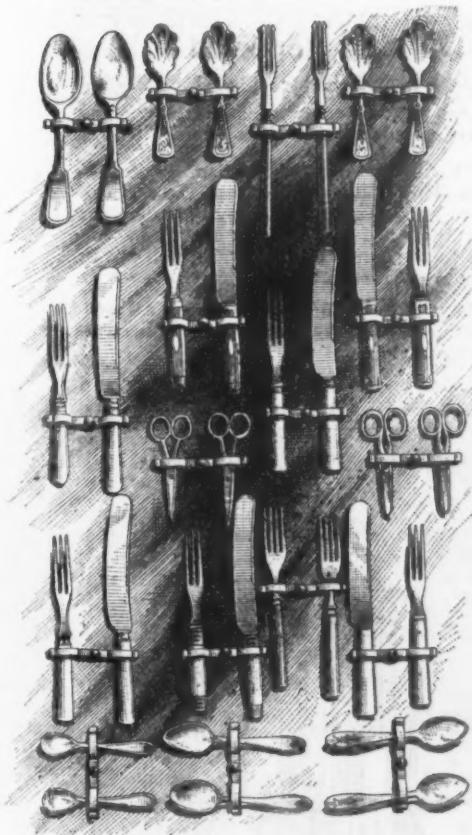


Fig. 651.—*Sample Board of Table Cutlery, &c.*

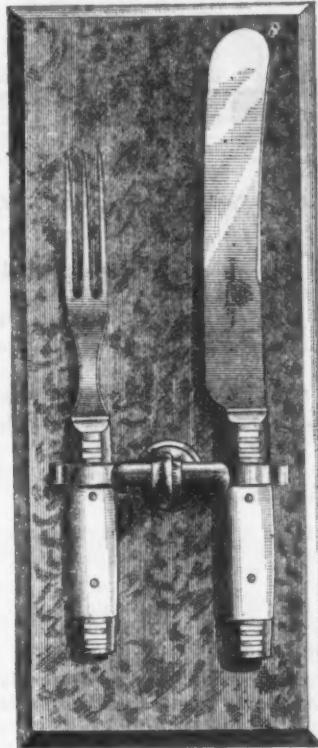


Fig. 652.—*Knife and Fork Sampled.*

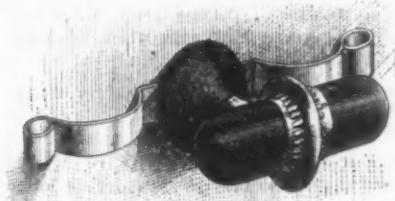


Fig. 653.—*Device for Sampling Table Cutlery.*

a number of drawers, containing all sizes of Flat Head Iron Screws and part of the Flat Head Brass Screws. Unbroken packages of Screws are kept on the shelves above this case, the sizes kept in stock

Gouges and the long articles of this kind extend to the front edge of the counter ledge. The File case, in the next section to the left, is about 20 inches deep on the base, and tapers back to 12 inches on the



Fig. 654.—*Showing Recess for Scales, &c.*

running from $\frac{1}{2} \times 2$ to $3\frac{1}{2} \times 24$. It will be noticed that the Tacks, to the left of the Screw case, have the sizes kept separate by movable partitions, which are painted the same color as the shelving, thereby

top, being arranged with pigeon holes for the different size Files.

Above the File case is Blacksmith and Carriage Hardware, such as all kinds of Malleables, Axle Clips, &c. Under the

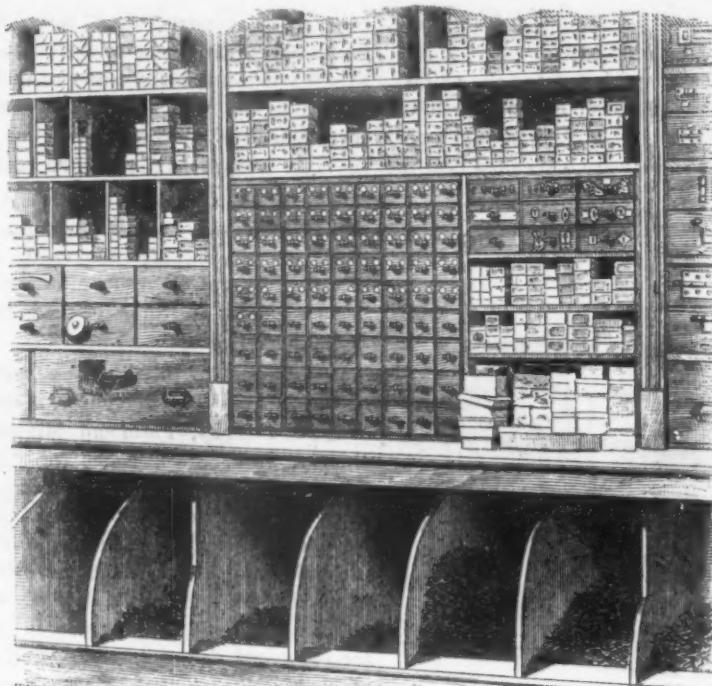


Fig. 655.—*Showing Screw Case and Arrangement of Tacks.*

allowing the arrangement of Tacks in just the space each size requires. The following section is devoted to Hammers, Hatchets, Bevels and Carpenters' Tools, while the drawers for Ship Augers, Chisels,

counter shelf, right here, Coil Chain, Sledges, Wedges, &c., are kept. Fig. 656 illustrates a part of the drawers sampled with Carriage Malleables; also another recess in the shelving, to the left of which

is the Bolt case. To the right of the Scales will be noticed drawers, which are capable of holding about 30 pounds each of Horse Nails, these drawers being used to retail Horse Nails from. The space above the Scales is used for keeping Bolts in full packages.

The Bolt rack is referred to as being very convenient, extending from the counter shelf to the ceiling, and is about 16 feet long. Its capacity for Carriage Bolts includes sizes from $\frac{1}{8}$ to $\frac{1}{2}$ in most all lengths up to 18 inches, and from $\frac{1}{8}$ to $\frac{1}{2}$ Tire Bolts in all lengths. The bins

The projecting shelf of this rack is 16 inches, allowing Handled Axes to be stood upon it. The gas-pipe rack on the top is used for Handled Picks. The bins underneath are used for Harrow Teeth, Unhandled Axes, both single and double bitt, Wedges and like heavy goods.

The Belt rack, as shown in Fig. 658, is spoken of as a most convenient way of handling Belting, especially when the sizes in stock run up to 16 inches or larger.

It is made entirely of hard wood, using 1-inch gas pipe for the axles. A clear



Fig. 656.—Showing Recess for Scales and Some of Bolt Rack.

under the Bolt rack are utilized for Nuts, Washers, Lag Screws, &c.

At the base, and in front of the counter, Fig. 649, the platform for holding Mixed Paints is 6 inches high and $8\frac{1}{2}$ inches wide. Bird Cages are suspended near the

idea of the construction of the rack may be obtained from the illustration. An axle is put through the center of each coil of Belting and wedged tight with wood; then the coil is rolled up an incline until the axle drops into the wooden boxing.

The tin shop, as already shown in Fig. 648, is immediately above the store. The work bench occupies the entire space across the front of the building, other benches, racks and bins being arranged as is found most convenient.

In addition to this building the firm occupy a two-story warehouse, used for Wagons, Buggies, Farm and Mining Machinery, Iron, Steel, Nails, &c. Also a one-story building as a storehouse for Stoves. What would impress one in looking over this establishment would be the convenience of arrangement for each line of goods; the ingenuity displayed in perfecting the many new features in which are embodied compactness, as well as an admirable display of the stock, and also the large amount of thought and labor which has been expended upon the store as a whole. Doubtless many of our readers will receive valuable suggestions from the illustrations and description, which show very forcibly the interest and pride taken in the West in having handsome and convenient Hardware stores.

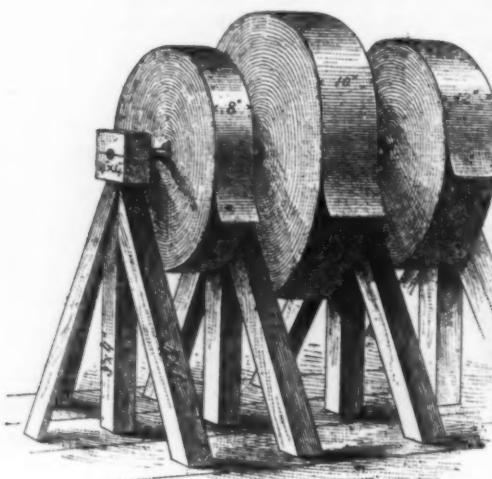


Fig. 658.—Belt Rack.

ceiling by hooks fastened to a gas-pipe rack, there being two smaller circles inside a larger one; the hooks on which the cages are hung being 16 inches apart. Fig. 657 represents their rack, which is on casters, for Axes, Picks, Wedges, &c.

That Eleazer Williams, dealer in Hardware, Pittsfield, Mass., has opened a Hardware store at Dalton, Mass.

That S. N. Naramore & Son, Eagle Village, N. Y., have closed out their Hardware business and removed to Silver Springs. A. L. Merchant and F. R. Wilson have rented the store and will put in a stock of Hardware.

That H. A. Adams has opened a Hardware store in the Kinney Building, Chester, Conn.

That Sawyer & Gifford, Hardware and Agricultural Implements, Dover Me.

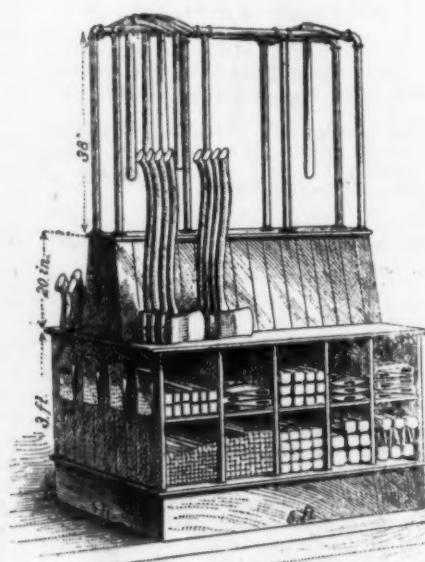


Fig. 657.—Rack for Picks, Axes, &c.

have recently enlarged their store and improved its arrangement.

That J. H. Dodge has opened a new Stove and Hardware store at Arcade, N. Y.

That J. M. Heisig, Hardware, Arlington, Wis., has sold out his business to F. A. McKillips.

That J. H. Dobson & Co. are a new Hardware firm at Garvin, Iowa.

That Dean & Sprangers have succeeded G. P. Dean & Co., dealers in Hardware, Sheboygan, Wis.

That Barr & Petzel have purchased the Hardware and Stove business of J. W. Crawford, Salem, Ore.

That the firm of Lloyd & Opp, Hardware dealers at Mansfield, Pa., has been dissolved. Frank M. Opp has purchased the stock of goods and will remove it to Muncy, Pa.

That White & Co., Winnipeg, Man., have admitted H. Steep to partnership in their Hardware business.

That Walter C. Quintard, Norwalk, Conn., has sold out his Hardware business to A. T. Cooley.

That A. J. Hoard, Hardware and Implements, Sharon, Wis., has disposed of his business to C. F. Arnold.

That Rechlin & Frank, Bay City, Mich., opened their new Hardware store on Monday, April 13. Messrs. Rechlin & Frank are experienced Hardwaremen and are the proprietors of a very attractive and well-arranged establishment, which comprises three floors and basement. The first floor is filled with Builders' Hardware

and House-Furnishing Goods. The second floor is devoted to Stoves, of which a large and interesting variety is carried. The third floor contains the tinshop and a store room for Stoves and Agricultural Implements. The basement is stocked with Oils, Heavy Hardware, &c.

That John Meigs, Elkhorn, Wis., dealer in Hardware, has been succeeded by Russell Bros.

That J. Dornblatt & Co., dealers in Tinware, &c., Athens, Ga., have been succeeded by Julius Dornblatt, who will continue the business at the old stand.

That George Peck is thinking of opening a Hardware store at Wayland, N. Y.

That E. R. Babcock has bought George Dare's interest in the Hardware firm of Briggs & Dare, South Omaha, Neb. The new firm will add to their already large stock.

That Rigg Bros. & Webster, Hardware and Implements, Glenwood, Minn., have sold out the business to Rigg Bros.

That Cowing & Hill, Huntley, Minn., dealers in Agricultural Implements, have admitted H. Marretta as a partner.

That Bailey & Watkins, Hardware, Janesville, Minn., have dissolved. A new firm under the style of Bailey & Co. will continue the business.

That the Co-operative Store at Hiawatha, Kan., will hereafter handle Hardware.

That Kreider Bros., Quincy, Ill., will open a Hardware store in the Dutcher Building in that city.

That the Thomas Sweeney Hardware Company, Rapid City, S. D., have been incorporated, with a capital of \$60,000.

That Stephens & Cooper, Amboy, Minn., have sold out their Implement business to W. F. Cooper.

That Wm. C. Grier has succeeded to the business of Rowland & Butler, dealers in Hardware, Guns, Agricultural Implements, &c., Blunt, S. D.

That the Hardware firm of Monroe & Carpenter, Pullman, Wash., has been succeeded by the Pullman Hardware Company, who will continue the business at the old stand.

That the Hardware firm of Lincoln & Perry, Pullman, Wash., has dissolved. Mr. Lincoln has purchased the interest of his former partner and will continue the business at the old stand.

That S. L. Howe, Stoves, Tinware and Implements, Marlboro, Mass., has disposed of his business to G. A. Ridyards, who intends to make improvements in the establishment.

That A. Preck has purchased the Hardware and Implement business of W. H. Dawson, Slayton, Minn.

That Glines & Keeler have purchased the stock and fixtures of Geo. W. Fisk, Stove and Tinware dealer, Hudson, Mass. They are making extensive changes in the store and will soon be ready to open with one of the largest and best assorted stocks in that vicinity. Plumbing and piping will be a specialty.

That S. E. Dutton has purchased the Stove and Hardware business of M. A. Brown of Corfu, N. Y., and will continue the same at the old stand.

That E. Williams will open a Hardware store at Dalton, Mass., in a week or two.

Side Lines.

THE DISCUSSION of the question as to the advisability of Hardwaremen carrying in stock a larger or smaller assortment of Bicycles, Electric Goods and similar articles has called out a number of letters from the trade in regard to side lines. While many of our correspondents

refer to their experience in handling special lines, some of them express their opinion pro or con in regard to the desirability of the Hardwareman going beyond his strict line and adding related goods to his stock. Some of our correspondents maintain that a Hardware merchant should keep a strictly Hardware store, leaving outside lines to other branches of business. On the other hand, it is maintained that inasmuch as encroachments are being made on the Hardwareman's field, it is necessary for him, in self-defense and with the laudable enterprise which characterizes the true merchant, to add to his stock anything which can advantageously be carried. It is obvious that this question must be determined in any given case in view of the special circumstances, as it is manifestly impossible to lay down a general principle which will have applicability under all circumstances.

In the following letter from a Hardwareman in Missouri the inadvisability of handling side lines is maintained by our correspondent, who illustrates his position by references to Bicycles and Electrical Goods:

I am opposed to all these side lines. Business gets so mixed up now that you cannot strictly designate a store by the line of goods which is kept for sale. It is a little of everything (*mixtum compositum*) and nothing of anything in particular. It would be far better if a merchant would confine himself to one branch of business in a business manner, and not attempt to sell everything in a blind way, because to do justice all around men must know the goods throughout. If they don't they cannot do an honest business. Bicycles may be handled by a Hardware dealer providing he has room for them and there is no special store in the place where other sporting goods are kept. Then by keeping two or three machines on hand he may succeed in getting an order for one he has not on hand, but can send for, and some communities will appreciate the effort of the storeman to do so. Then, again, they will not, and would rather go to the larger cities and buy there, even if it costs more. It sounds better to tell friends. On Electrical goods, such as Door Bells, the application thereof, it seems to me, is not sufficiently understood to warrant them being handled as shelf goods. It may do where a merchant has mechanical skill to fit up a bell in a house, or if there is a practical mechanic in the neighborhood to do such work. Then, I suppose, it would work. The great trouble is that people get posted on prices (mostly cheap goods), and then they cannot see the difference in the quality.

A well-known Hardware house in New York State, referring to the encroachments on the Hardwareman's field on the part of other merchants, thus argues in favor of taking up side lines:

Department stores have infringed to such an extent on the trade of legitimate Hardware that it becomes necessary for the retail Hardwareman to lay aside all conscientious feeling of interfering with other branches of business, and fill the vacancy with other lines of goods, and if Bicycles, Tricycles and Electrical Goods will help, then we say so be it, and thinking so have just added them to our line.

The following judicious remarks with reference to the question are taken from a letter from a Western Hardwareman:

As to what should or could be carried

by Hardwaremen, it depends altogether on where they are. To begin with, in a small town where a great many lines are not yet represented it will pay to handle anything for which there is a demand, not only on account of the profits but also to hold the trade on his regular goods. As the town enlarges and other dealers put in a full line of their respective goods, it would again pay the Hardwareman to drop his side lines and give his whole attention to goods strictly in his line, as it will not pay to court the ill-will of the other merchants.

Writing from Wisconsin a Hardware house refers to Bicycles as evidently "the coming addition to the poor Hardwareman's already long line of goods." Our correspondent then adds:

The lot of the Hardwaremen is not cast in pleasant places. What with Shelf and Heavy Hardware, Iron, Sash, Doors, Blinds, Agricultural Tools and a few machines, Paints, Oils, Glass, Tinshop, Belt-ing and Hose, Stoves and Tinware, House-Furnishing Goods, Rope, Cordage, &c., it keeps him tolerably active in finding room for displaying and handling his cosmopolitan business.

Cycles.

A FEATHERSTONE, Chicago, Ill., manufacturer in the United States of the Improved Pneumatic Tire Bicycles under Dunlop's patents, has on the market for the present season the following machines:

Featherstone's Pneumatic Safety.
Featherstone's Ladies' Pneumatic Safety.

Cyclone Safety.

Ladies' Cyclone Safety.

No. 4 Safety.

No. 3 Safety.

No. 2 Safety.

The Pneumatic Safety has improved diamond frame, 30-inch wheels, with pneumatic tires, geared to 54 inches. Frame of Credenda seamless steel tubing, with drop forgings, seamless steel tubular front fork, detachable cranks, improved rear chain adjustment, handles and seat adjustable, mud guards to both wheels, improved Fish adjustable saddle, improved spoon brake, curved tubular handle bar brought well into place, detachable foot rests, ball pedals of improved design, long socket ball steering head, improved ball bearings throughout, improved Humber pattern driving chain, all drop forgings, including sprocket wheel. Finish, best baked enamel; nickelized parts on copper. The weight is 48½ pounds. These machines are also fitted with Dunlop's cushion tires. The Ladies' Pneumatic Safety is similar in construction to the foregoing, having however 28-inch wheels, drop frame and dress guard. The weight of this wheel is 38 pounds. The Cyclone Safety is made with diamond frame; wheels 30 inches, geared to 54 inches. All Credenda steel tubing and drop forgings, including sprocket wheel. Endless molded rubber tires, 7 inch rear, 4-inch front. Hollow rims with tangent spokes, nickelized to intersection and adjustable at rim. Hollow front fork, center adjustment. Detachable cranks; Humber pattern chain; ball bearings throughout. New combination roller and eccentric rear brake; improved Fish saddle; detachable foot rests; mud guards to wheels and driving chain. Finish, best baked enamel; nickelized parts on copper. Its weight is 49 pounds. The Ladies' Cyclone has 28 inch wheels; improved drop frame with detachable bar for ladies' use; mud guards to both wheels and driving chain; dress guard, and weighs 38 pounds. No. 4 Safety is a combination, detachable bar,

drop frame for boys or girls from 10 to 18 years of age. It has 26-inch wheels, geared to 46 inches, 4-inch crescent rims and endless molded rubber tires. The wheels run on hardened cone bearings, adjustable to wear; improved plunger brake; semi-hollow forks; detachable nickelized cranks, 4 to 5 inch throw. The frame is enameled, with nickelized trimmings; rear adjustment; mud guards to wheels and driving chain. When ordered for girls dress guard will be supplied. This machine is also made with ball bearings to wheels, crank shaft and pedals, and is thus known as No. 5. The No. 3 Safety is a medium-grade machine for boys 9 to 15 years of age, made with straight frame. The No. 2 is a still cheaper machine, made with improved drop frame and 22-inch wheels. It is also made having the bright parts tinned instead of nickelized, and is known as No. 1.

OVERMAN WHEEL COMPANY, Chicopee Falls, Mass., makers of Victor Bicycles, are sending out one of the artistic catalogues of the season. The delicately tinted paper cover is in bas-relief, with the headings throughout the book in the same color. The paper and typographic work are especially fine and the illustrations clean cut and distinct. Perspective views are given of the 1889 and 1890 additions to their works.

HORTON, GILMORE, McWILLIAMS & Co., Chicago, Ill., advise the trade in a circular that as a result of a large and growing demand for a good, easy-running trustworthy Bicycle that can be sold at a low price they have selected for their trade two Bicycles. Illustrations are given of these, and are designated as Nos. 20 and 21. The No. 20 is for gentlemen, with a straight frame, 30-inch wheels, 5-inch gray rubber tires, direct spokes, ball bearings to wheels and pedals, Fish saddle, Humber chain, and tool bag with tools. The No. 21 is a convertible wheel for either ladies or gentlemen; 28-inch wheels, tangent spokes, ball bearings all around, steel tubing, forged steel chain, Garford saddle, neat chain and dress guards, crescent rim, 5-inch tires of fine quality and tool bag with tools. They state that these machines embody in their construction every essential feature required to make them superior medium-grade Bicycles. Both machines are handsomely finished in black enamel, highly polished, and the trimmings finely nickel plated.

The above firm also issue a circular sheet relating to "Rights of Bicycles Upon Public Highways." In this is given a number of decisions, showing the interpretation placed by the courts upon the laws of the various States regarding this matter. It will be interesting to Bicycle riders in general to learn that wheels have undisputed rights upon any highway. The circular states that a Bicycle is a Carriage, and that the word Carriage is so defined, both by the lexicographers and by the courts in England and America, as to include Bicycles, and that the Bicycle is held by the common law decisions of both countries to be a Carriage. It has been so decided by the Government authorities at Washington; by the New Hampshire Supreme Court, and so regarded by the common councils of Chicago, Boston, Brooklyn and other cities. The rider of a Bicycle is the driver of a Carriage, and as such entitled to the same rights and privileges that belong to the drivers of other vehicles which travel the public highways. The State of New York also has a statute which provides that no municipal or park corporation or other body within the State shall pass regulations or ordinances that shall prevent riders of Bicycles from using their wheels upon the common public highways, they

being accorded the same privileges and subject to the same laws as govern drivers of Carriages.

Sample Steel Goods Rack.

UNDERHILL, CLINCH & CO. have recently placed in their store, 94 Chambers street, New York, a neat and convenient, though inexpensive, Sample Steel Goods Rack, of which we give the illustration, Fig. 659. It is situated on the left hand of the entrance, near the front of the store. It consists of a Shelf 2 feet wide and 9 feet long, being 6 inches

from small size harness hooks, while the long-handled Hay and Manure Forks are held in place by wardrobe hooks, one being placed on each side of the handle. In the upper and lower shelves are over 50 1½-inch holes, through which the handles of Garden and Lawn Rakes, Hoes, Weeding Hoes, Manure and Potato Hooks, Hay Rakes, &c., are passed. Under the lower shelf is a narrow platform upon which the shorter-handled tools stand, while the tools with longer handles rest on the floor. This arrangement results in a uniform height of the tools at the top. There is

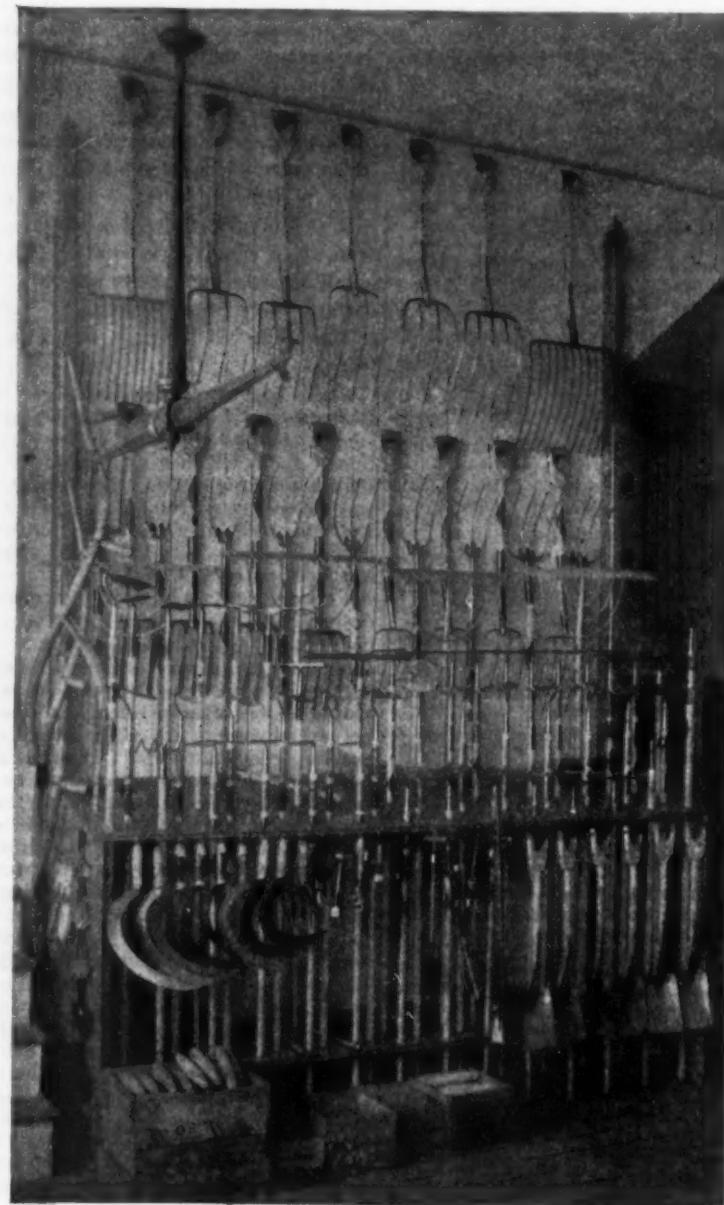


Fig. 659.—Sample Steel Goods Rack.

lower in the front than at the back, supported by uprights at each end. Against the wall, at each end, pieces of 4 x 4 are fastened, extending nearly to the ceiling, tastefully finished at their tops. The shelf is 3½ feet from the floor in front and 4 feet at the back. A lower shelf is placed 1 foot from the floor, and is level. A 5-inch space is left between the back edge of the upper shelf and the wall, to allow for the handles of the Hay and Manure Forks which extend downward from the hooks on the wall. The D-handled Forks, of which there are two rows hung on the wall, are suspended

a space of about a foot left on the upper shelf, which has no holes, between the Wood Rakes, which stand near the back edge, and the holes nearer the front. This is used for Scythes and other goods which show to advantage lying down. Brass screw hooks are used on the end and along the edge of the upper shelf for sampling Garden Trowels, Shuffle Hoes, Grass Hooks, Weeding Forks, Scythe Rifles, Shovels, Spades, Hedge Shears, &c. The opposite end from the one shown has samples of D Handles. The shelves and end pieces are made of 1-inch

pine, finished in natural wood. Snaths are hung at one end, and boxes of Scythe Stones are placed on the floor in front of the rack. By this arrangement a quantity of goods are shown to good advantage, while the rack is a desirable addition to the store fixtures. It is inexpensive, and so simple in construction that any Hardwareman could reproduce it for his own use.

Exports.

SUPPLEMENTARY SHIPMENTS PER BARK KENT-MERE, APRIL 7, 1891, FOR MELBOURNE, AUSTRALIA.

By Metal Stamping Company.—1 case Fire Arms, 1 case Cartridges.

PER BARK EMMA L. SHAW, APRIL 11, 1891, FOR WELLINGTON, NEW ZEALAND.

By H. Disston & Sons.—517 pounds of Hardware, 8 cases Saws.

By W. H. Crossman & Bro.—4 dozen Rakes, 600 pounds Nails, 3 Blowers, 1 gross Traps, 8 dozen Hammers, 1 gross Egg Beaters, 2 cases Lamp Goods, 13 dozen Toy Banks, 89 pounds Cordage, 49 pounds Nails, 2 cases Carriage Hardware, 2 cases Builders' Hardware.

By McLean Bros. & Rigg.— $\frac{1}{2}$ dozen Scales, 2000 Bolts, 7 Churns, 66 dozen Rakes, &c., 1 Drill, 3 dozen Hinges, 30 dozen Axes, 12 dozen Lemon Drills, 5 dozen Axes, 6 dozen Velocipedes, 1 dozen Carpet Sweepers, $\frac{1}{2}$ dozen Wringers, 1 Mangle, 2000 pounds Nails, 6 dozen Lanterns, 2 Freezers, 4 dozen Meat Choppers, 1 Scale, 5 sets Axles, 6 dozen Forks, 1 dozen Axes, 9 Store Trucks, 700 pounds Horse Nails, $\frac{1}{2}$ dozen Scales, 30 sets Axles, 20 Vises, 2 Miter Boxes, 4 Stoves, 1000 pounds Nails, 9 dozen Axes, 12 dozen Rat Traps, 4 dozen Picks.

By R. W. Forbes & Son.—26 boxes Horse Nails, 4 dozen Seed Sowers, 3 cases Builders' Hardware, 12 dozen Rakes, 2 dozen Snaths, 6 dozen Shears, 15 packages Lampware, 3 dozen Wringers, 15 packages Builders' Hardware, 1 dozen Seed Sowers, 2 dozen Choppers, 716 pounds Tacks, 21 Stoves, 8 packages Carriage Hardware, 39 dozen Tools, 20 packages Builders' Hardware, 62 Forks, 10 $\frac{1}{2}$ dozen Axes.

By H. W. Peabody & Co.—3 cases Edge Tools, 1 case Builders' Hardware, 1 case Hardware, 1 case Forks, 950 pounds Horse Nails, 1 $\frac{1}{2}$ dozen Wringers, 1 case Plated Ware, 2 cases Whetstones, 1 case Cutlery, 7 packages Stoves, 1 case Rakes, 8 packages Hardware, 3 packages Churns, 1 case Plated Ware, 1 case Pumps, 12 packages Lawn Mowers, 4 cases Glue, 6 packages Hardware, 12 cases Clothes Wringers, 15 Stoves, 10 cases Bird Cages, 10 cases Bush Hooks, 1 case Emery Wheels, 1 case Edge Tools.

By F. B. Wheeler Co.—3 dozen Braces, 1 case Hammers, 3 dozen Hardware, 1 dozen Wrenches, 3 cases Agateware, 3 cases Hardware, 4 cases Axes, 4 packages Hardware, 1 case Tinware, 1 barrel Casters, 1 case Hardware, 6 cases Hardware, 1 case Asbestos Packing, 1 case Guns and Shells, 7 cases Tinware, 3 $\frac{1}{2}$ dozen Hardware, 2 packages Pumps, 1 dozen Bird Cages, 4 cases Hardware, 1 case Tools, 4 packages Hand Mowers, 1 case and 1 dozen Hardware, 2 packages and 1 case Hardware, 33 cases Fruit Jars, 2 crates Hardware, 1 case Hardware, 2 cases Farming Tools, 9 dozen Hammers, 6 cases Hardware, 5 cases Pumps, 6 packages Hardware, 1 case and 3 packages Hardware, 1 case Emery Wheels.

FOR AUCKLAND.

By Johnston Harvester Company.—5500 pounds Binders and parts.

By W. H. Crossman & Bro.—3 dozen Emery Wheels.

By R. W. Forbes & Son.—6 dozen Braces, 6 dozen Axes, 2 cases Plated ware, 1 case Hog Rings, 2015 pounds Bolts.

By H. W. Peabody & Co.—2 cases and 54 packages Builders' Hardware, 1400 pounds Horse Nails, 3 cases Lampware, 1 case Egg Beaters, 2 cases Nails, 1 case of Traps, 1 case Emery Wheels, 2 cases Bolts, 2 cases Lampware, 1 case Miter Boxes.

By F. B. Wheeler Company.—10 dozen Bush Hooks, 16 $\frac{1}{2}$ dozen Hardware, 4 dozen Axes, 2 dozen Hames, 4 dozen Axes, 1 dozen Wringers, 1 $\frac{1}{2}$ dozen Hardware, 7 dozen Hammers, 2 cases Axes, 2 dozen Saws.

FOR WELLINGTON AND AUCKLAND.

By R. W. Cameron & Co.—66 pounds Carriage Hardware, 13 packages Lamp Goods.

PER S. S. HENLEA, APRIL 15, 1891, FOR SIDNEY, N. S. W.

By Chas. G. Foster.—1 package Stoves and fixtures.

By Rogers, Smith & Co.—18 packages Plated Ware.
By Meriden Britannia Company.—8 boxes and 18 packages Plated Ware.
By Winchester Repeating Arms Company.—47 Guns.
By F. & J. Meyer.—156 dozen Lamps, 78 dozen Lamps.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

The past week has witnessed practically a repetition of the flattering results experienced during the preceding week in the general distribution by jobbers and manufacturers, and importers express satisfaction with the general movement also. In no quarter is there any complaint whatever. Specialties, as well as staple goods in the line of Paints and Colors, have received the attention of buyers not only here but at points tributary to this market, making altogether a volume of business that compares favorably with the average for the season. Outside of a lower level of prices for Pig Lead there is nothing whatever in the situation of the market for base materials that would cause the slightest uneasiness as to the future of prices for pigments. The decline in Lead, it would seem, has little or no bearing except perhaps with a class of buyers who are ever on the alert for the faintest signs of possible disturbing factors. With continued favorable weather for outdoor work a brisk trade in house-painters' supplies is practically assured, and the prospects are considered favorable for a full average movement in other lines.

White Lead.—Corroders speak very cheerfully regarding business in the chief production, and, as a rule, state that the favorable experience of last week has been improved upon as far as aggregate sales are concerned. Jobbers also note a liberal distribution of the pure pigment, as well as a good trade in the cheaper varieties. Manufacturers' prices have undergone no change whatever, but jobbers deviate more or less from the list when liberal orders extending over a variety of goods may be involved. For example, lots of a few kegs of pure Lead are occasionally put in at the list price for 12-ton lots, while a little allowance is also made on some of the cheaper varieties under similar circumstances.

Red Lead and Litharge.—The larger consumers are not at all conspicuous, as buyers at the present time, but the movement of jobbing quantities is fully up to the average for the season. There is no particular effort to hurry business along and manufacturers adhere closely to the old price-list and terms.

Zincs.—The position of the market for American Oxide is as strong as it has been at any previous time this season. Manufacturers maintain harmonious relations, and the demand from all sources continues full, leaving little or no accumulation of supplies in first hands. Prices are very firm, but without quotable change. Importations of foreign brands are still on a fairly liberal scale, but the supply does not appear to be excessive, and prices for these, as well as for the domestic product, remain very steady.

Colors.—Orders for Paris Green are coming in rather slowly, there being little demand from the farming sections in the absence of visitation of insect pests. The list prices published last week are, however, adhered to by nearly all manufacturers. In the general line of Dry and Oil Colors adapted to house painters' use there is a good, steady movement, and the

sale of Ready-Mixed Paints continues on a liberal scale also. Grinders' Colors are moving with a fair degree of freedom, with Venetian Red in noticeably good demand. No important changes in prices come to notice, and with some few exceptions the undercurrent is decidedly firm.

Miscellaneous.—Barytes is in somewhat better supply, and buyers find no difficulty in securing the various grades at old prices. There is also a better supply of China Clay and Talc, but the demand continues free and prices are firm. Terra Alba remains in favorable position, and full former rates are obtained by sellers. The arrivals of Block Chalk are closely absorbed, and prices for lots for future shipment remain high. There has been a brisk movement in Whiting and Paris White at unchanged prices.

Oils and Turpentine.

Somewhat in contrast with the experience in the Paint trade, business in this line has been spiritless, and the market presents no distinctively new features. Linseed Oil, in fact, seems to be about the only article on the list that derives any benefit from the activity in Paints. However, it is patent that the condition of the market for Lard and inferior Greases operates to favorably influence the market for most descriptions of lubricants, and that fact, along with the favorable general situation of supplies, prompts slightly more liberal action on the part of buyers, who have latterly observed more than ordinary caution.

Linseed Oil.—No change in prices has been made by city crushers, nor is any discovered in the current sales of outside brands. The latter, as a matter of fact, are coming this way in moderate quantities only as current product is largely disposed of to better advantage at other points. The general demand is good, and the movement of supplies is better, if anything, at the present time than it was a week ago.

Cotton Seed Oil.—Business in both crude and refined product has been on a somewhat larger scale, with low grades receiving the greater share of attention. The large home consumers and exporters have figured with some prominence as buyers, but purchases have run chiefly on lots of a few hundred barrels. Prices are a shade firmer than they were a week ago, with a portion of the recent decline recovered on the low-grade Oils. Strictly prime quality continues scarce.

Lard Oil.—While not as free as it was last week, the demand has continued fairly active, taking up nearly the entire output of city pressers and absorbing the supply at hand from outside sources also. Prices have undergone no change, and the general situation is as strong as it has been at any time this month in the absence of any decided turn in cost of raw material.

Fish Oils.—No transactions in crude Sperm or crude Menhaden Oils have been recorded, but there is more inquiry, and the canvass made by buyers finds the market for both commodities very firm. The refined products are without change in price, but find somewhat freer sale. Supplies of manufactured Whale Oils have been reduced to an unusually low point and higher prices in the near future are likely to be established.

Miscellaneous.—Olive Oil, in barrels, is freely offered on the spot and to arrive, with some little concession on price for lots of 10 to 20 barrels. The Cocoanut Oil situation has undergone no change. Sellers offer at the prices that ruled last week, and buyers take hold indifferently. Tallow Oil is higher, but selling rather slowly. Palm Oil is quiet and unchanged. Red Oils a shade firmer, but moving slowly.

New Calipers and Dividers.

Neale & Goulding, Worcester, Mass., are introducing to the trade the Copeland Patent Divider and Caliper, as shown in the accompanying illustrations, Figs. 1, 2 and 3. Fig. 1 represents the No. 1 divider, which is made in 4, 5, 6, 7, 8, 9 and 10 inch sizes. A small pencil can be used in 4 and 5 inch and a common pencil in other sizes in place of movable point.

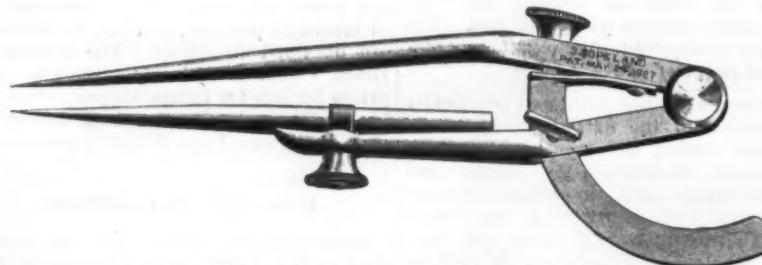


Fig. 1.—New Calipers and Dividers.—No. 1 Divider.

The 4 inch will scribe an 11-inch circle, the 5 inch a 13-inch circle, the 6 inch a 17-inch circle, the 7 inch a 20-inch circle, the 8 inch a 22-inch circle, the 9 inch a 27-inch circle and the 10 inch a 30-inch circle. The 4 and 5 inch are especially adapted for draftsmen and students. Fig. 2 represents the No. 2 divider, made

durability and usefulness. The points are steel and properly hardened to mark wood or iron. The combination embodied in this tool will be appreciated by the mechanic, as he has in it a complete divider and an outside and inside caliper. We are advised that great care is used to make this tool a superior article in every way,

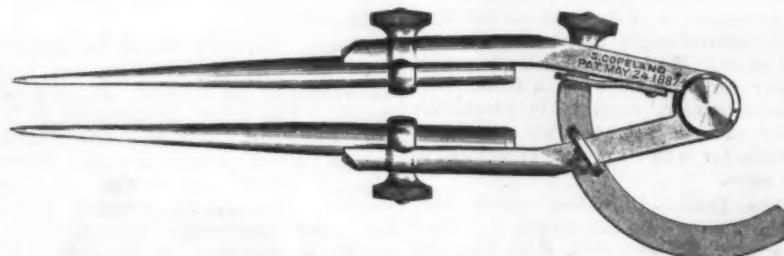


Fig. 2.—No. 2 Divider.

in 6, 7, 8, 10 and 15 inch, in which a common pencil can be used in place of movable points. The 6 inch by adjustment of points becomes 7 inch, the 7 and 8 inch become 8 and 9 inch and will scribe same size circle as No. 1 of corresponding size. The 10 inch by adjustment becomes 12 inch and will scribe a 35-inch circle and the 15 inch will scribe a 52-inch circle.

and it is suggested that a trial order will suffice to show its utility and excellence.

No. 427 Padlock.

Slaymaker, Barry & Co., Diamond Lock Works, Lancaster, Pa., John H. Graham & Co., 118 Chambers street, New York,

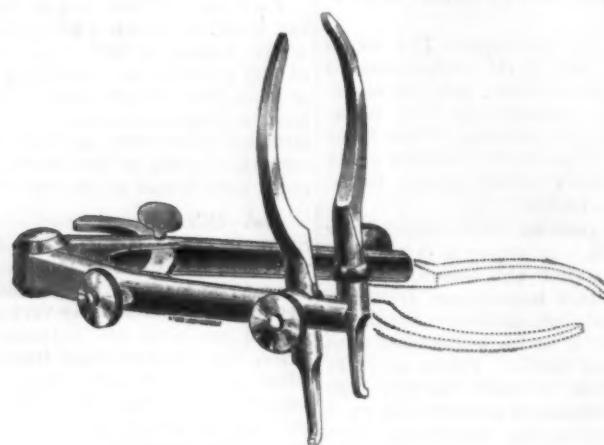
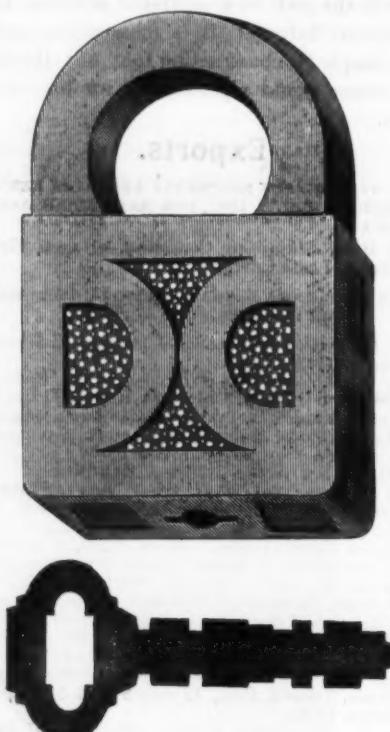


Fig. 3.—Outside and Inside Caliper.

Fig. 3 represents the outside and inside caliper, which are used with the 6, 7, 8 and 10-inch divider body. With points at right angles to body they are enabled to caliper as small as $\frac{1}{4}$ inch inside diameter. Adjustment as per dotted lines enables the 6 and 7 inch to caliper 8 inch

agents, are introducing a padlock, as illustrated herewith. It is described as a bronze unpickable self-locking spring padlock, which locks on each side of both ends of the hasp, and in which nothing has been omitted which was necessary to make it perfect, and nothing added which

was not necessary. It is furnished with light, attractive, rolled-steel nickel-plated keys. The locks are made in four styles of finish, either all highly polished bronzed, or with depressed parts in brown, black and green, with the raised parts



No. 427 Padlock.

polished bronze. The lock is referred to as the result of wide experience, long and careful study, and what was learned by direct contact with a large trade.

Lawn Mower Grass Carrier.

Glennon & Krause, 2843 Indiana avenue, Chicago, Ill., are introducing a grass carrier, as illustrated herewith. The construction of the carrier is described as follows. The body part of the carrier is made of oil-cloth. At the bottom a heavy saddle reed welt is sewed in to prevent the wind from blowing it out of shape. The bottom is made of heavy sail duck. It is stated that the carrier is adjustable to any



Lawn Mower Grass Carrier.

size or make of lawn mower, and that it can be attached and adjusted to any machine in less than five minutes. It is claimed that it will carry all the grass that a person could wish for, and that a circuit can be made around a large lawn two or three times without stopping to dump the grass or without dropping a sprig of grass on the lawn. The carriers can be packed in a small space for shipment, as they fold together. The weight is 4 pounds each.

Edwards' Orange Spoon.

The Holmes & Edwards Silver Company, Bridgeport, Conn., are placing on the market this spoon, an illustration of the Triumph pattern of which is given in the accompanying engraving. These goods are manufactured in the company's original and well known sterling silver inlaid for

a strong current of air created by a rapidly revolving fan, to which brushes are attached, and forming part of the fan blades within a casing open beneath, and provided with a rear opening for the discharge of rubbish. Fig. 2 shows the working parts in detail, exposing to view the fan blades with the brushes attached. The working of the machine is described as

operator. It is stated that when the grass is short the handles are to be held so that the brushes just miss or slightly touch the surface of the sod, the rubbish being elevated by the wind current created by the rapidly revolving fan, and thrown into the box F, provided for that purpose. The box is referred to as being easily detached from the machine, and the sweeper as



Edwards' Orange Spoon.

the jewelry trade, and in their durable extra sectional XIV plate for the hardware trade. The illustration represents the spoon as manufactured for the hardware trade, from whom, owing to the price and quality of the goods, a large demand is expected. The spoons, are artistic in

follows: A is the driving wheel; B, gear meshing with small gear B', which drives the shaft with the fan attached. The small gear B' is loose on the shaft, being provided with a silent, positive ratchet which, when the machine is pushed forward, drives the fan, and when drawn



Fig. 1.—Gem Lawn Sweeper.

appearance and practical in application, and are packed in sets of six in satin lined leatherette boxes, which are very neat and attractive. An illustration of the Wind-

backward fan remains stationary. D represents the brushes with retaining springs, E, which hold the brushes in radical position, allowing them in going

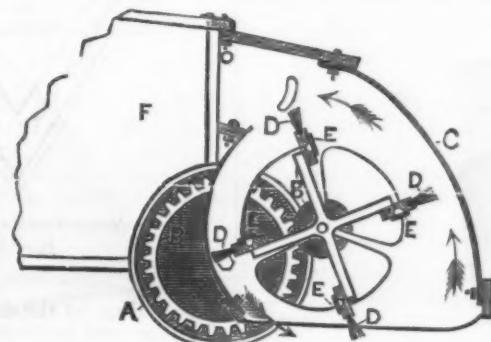


Fig. 2.—End Elevation with End Plate Removed.

sor pattern of this spoon is presented in the company's advertisement on another page of this issue.

Gem Lawn Sweeper.

Schaeffer & Co., Dayton, Ohio, are introducing a lawn sweeper, as illustrated herewith. Fig. 1 represents the sweeper complete, with handles and rubbish box, ready for use. The principle by which this sweeper sweeps and cleans a lawn is

over rough, uneven places, or in coming in contact with any hard substance, to fall back and pass over such rough places without mashing the fiber of the brushes, thus making it almost impossible to injure the machine. The brushes and fan revolve in the direction indicated by the arrows. By raising or lowering the handles the brushes are thrown closer to or elevated off of the sod, so that the machine will sweep down to the roots or pass over the surface, as the case may require. The handles are adjustable to the height of the

working equally well on long or short grass. The manufacturers claim that it will thoroughly clean a lawn of loose grass, leaves, twigs, and will take out stones of considerable size, also dead grass, fine twigs and dirt that cannot be removed by any other implement; that it makes a heretofore slow and tedious task a light and easy one, and that it is light-running, simple in construction and thorough in its work. Machines are made knock-down so as to be closely packed for shipping. Each machine is guaranteed by the manufacturers to give satisfaction.

Tripod Wash Bench.

Peabody & Parks, Troy, N. Y., are introducing a wash bench, as shown in Figs. 1 and 2. The advantages claimed for the



Fig. 1.—Tripod Wash Bench.

bench are, that when not in use it may be folded up into a small space, as in Fig. 2; that it is strong and durable, and that the washtubs may be set in any desired po-



Fig. 2.—Tripod Wash Bench, Folded.

sition with relation to each other. The manufacturers claim that a family with three of these will need no others for a lifetime.

It is reported that a general strike will be inaugurated at the Pennsylvania Steel Works on June 1, when the scale of the Amalgamated Association of Iron and Steel Workers will be demanded by the men.

Mexicans are beginning to export raw sugar to England and a growing trade is promised.

Perkins Toe-Weight Shoe.

Rhode Island Horse Shoe Company, Providence, R. I., are putting on the market a toe-weight shoe, as illustrated herewith. The manufacturers claim for this shoe that the weight of material is where it should be, at the toe; that the width of the web follows the formation of the shell of the hoof, wide at the toe and narrow at the heel; that it will average 25 per cent. lighter than the corresponding sizes of the regular brands of flat



Perkins Toe-Weight Shoe.

shoes, and that it will wear longer; that when put on plain it will wear practically level all around; that it is the true frog-pressure shoe; that it is perfect for speeding and trotters, for driving horses, and that it is better than the flat shoe for any purpose; that it will not pick up stones, snow or mud; that it will not throw sand or gravel, and that clay suction cannot pull it off, and that with its general all-round good qualities, combined with its light weight, it is the cheapest shoe in the market.

Eagle Mill Pick.

J. W. Truax, Essex Junction, Vt., is offering the trade a mill pick, as illustrated herewith. This shows a perspective view, with the blades in the head, and the handle ready for use. The hammer head, or double jaw, is made of steel, and the jaws are tempered spring steel. The

blades are of tool steel are of uniform width and thickness, except the portion that enters in past the lips of the jaw. The blades are tempered about half of their using length, and are to be extracted for grinding. Tongs for holding the blades while grinding are furnished, and are simi-

lar to blacksmith tongs, having a short mouth and small sliding ring. The blades may be ground on a grindstone or emery wheel, care being taken not to heat the blades while grinding. The handle is so fitted in the eye as to protrude a little, thus allowing the handle to be extracted, so that the blades may be sharpened on a rub stone or oil stone. The object of the mill pick is to furnish a good, cheap, light cutting tool for light work, such as facing when staffing off, and cracking and smoothing the furrows, as for all fine grinding with burrs a high finish is stated to be the present-day method. To supply the demand for a better and more handy tool for stone dressing, this pick is put upon the market.

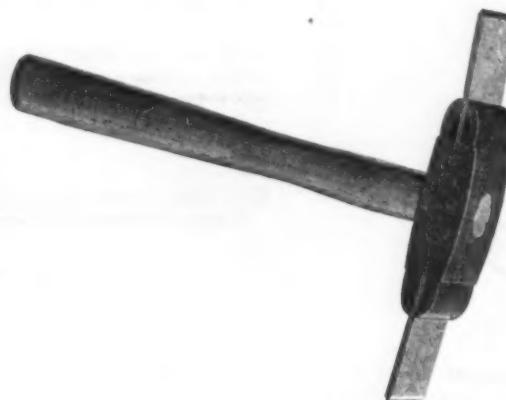
Perfection Burglar-Proof Key Fastener.

E. G. Carleton, 38 Court square, Boston, Mass., is introducing a burglar-proof key fastener, as illustrated herewith. It con-



Perfection Burglar-Proof Key Fastener.

sists of an escutcheon attached to a fork-shaped spring by links of chain. The jaws of the spring are formed to fasten



Eagle Mill Pick.

blades of tool steel are of uniform width and thickness, except the portion that enters in past the lips of the jaw. The blades are tempered about half of their using length, and are to be extracted for grinding. Tongs for holding the blades while grinding are furnished, and are simi-

into opposite sides of the handle of the key. It is designed for effectually preventing burglars turning or unlocking and pushing the key from the door by means of nippers or other instruments; also for preventing the key from falling out of the lock. The fastener is nickel

plated, neat in appearance, and the entire length is 3 inches.

Diamond Safety Bicycle Name-Plates.

John P. Lovell Arms Company, Boston, Mass., manufacturers of Diamond Safety Bicycles, in order to protect themselves and the public, have adopted a name-plate, as shown in Figs. 1 and 2, to be

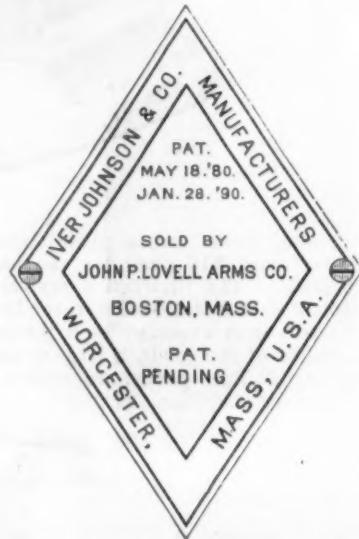


Fig. 1.—Name-Plate of Diamond Safety Bicycles.

used on all genuine Lovell Diamond Safeties. They state that they have received many complaints from parties in different parts of the country, saying that their wheels were sold at more than the regular advertised price. This, they further

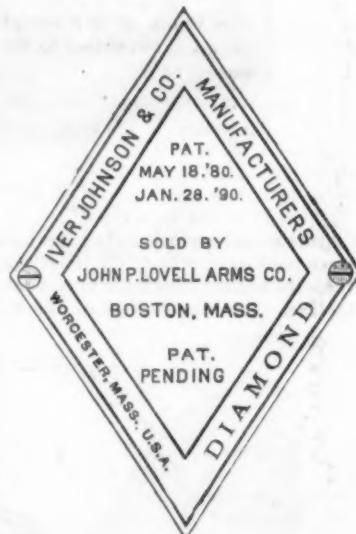


Fig. 2.—Name-Plate of Diamond Safety Bicycles.

state, is done by the different dealers putting their own name-plate on and selling the machines at whatever price they choose. The manufacturers have taken this means to prevent the public from being deceived in future.

It is reported that arrangements are being perfected by the Norfolk and Western Railroad and other interested parties to bring by a new established line of steamers iron ore from Venezuela to Norfolk, Va., whence it will be taken by rail to Virginia furnaces in the interior, shipping back coal from the Pocahontas, W. Va., coal fields.

The Standard Climax Cash Register.

The Standard Cash Register Company, Orange, N. J., are introducing a cash register, as illustrated by Fig. 1. The

explanation of the duplicate record slip, Fig. 3, a code accompanies the register, from which it is possible to make over 50 different combinations. For example, if A is printed in the cents column above a

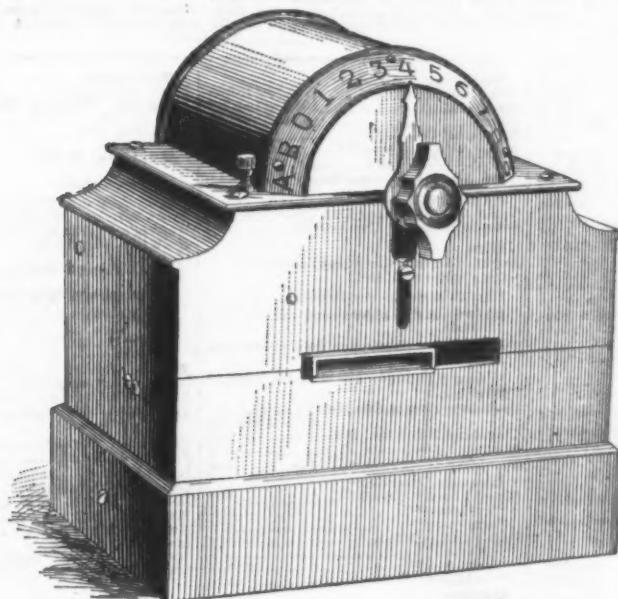


Fig. 1.—The Standard Climax Cash Register.

size of the register is 4 x 6 inches and 6 inches high, weighing about 10 pounds. The case is finished in nickel and bronze. The registers are furnished with or without cash drawers, as desired. The register

sale, it means that salesman A made a sale; if B is printed above the sale, it means that salesman B made the sale. If B A is printed, having B in the tens of cents column and A in the cents column,

No.

A. R. Jones & Co.

942 MAIN ST.,

ORANGE, N. J.

This Check is our receipt for goods purchased to the amount of

Dollars	Cents.
3	25

Fig. 2.—Receipt Check.

O	B
1	O
B	A
1	2
A	A
2	7
	B
	3
	5
B	B
1	5
	A
	5
	8

Fig. 3.—Duplicate Record Slip.

does not indicate the sales, but prints the amount on a check, Fig. 2, which is given to the customer as a receipt. It also prints a duplicate record on a slip of paper, Fig. 3, which is locked up inside of the ma-

chine. The check is placed in the opening in front of the machine; when the handle is depressed the check and the record are printed at the same time. In

it means that the sale below is a credit sale made by salesman A; B B would mean that salesman B made a credit sale; O O B would mean that salesman B made a sale of cigars to the amount below these let-

ters, &c. It is claimed for the register that every individual sale is shown; that credit sales, cash paid out, old bills paid, &c., may be recorded without the use of

paper slips, and without the sacrifice of other uses of the machine; that, in addition, special sales may be shown, and, if desired, the salesman who made each sale and every article sold; that it is an absolute system of keeping a record of all transactions of any retail store, and that it will print a check and record sales for any amount from 1 cent to \$10. Reference is made to the moderate price at which the register is sold.

I X L Bolster Spring.

The Racine Malleable and Wrought Iron Company, Racine, Wis., Bradley Wheeler & Co., Kansas City, Mo., agents, are offering to the trade bolster springs as illustrated herewith. Fig. 1 shows the spring as it appears with a load on; Fig. 2 represents it with no load on. These springs are made in six sizes, adapted for loads from 1500 to 10,000 pounds, and the claim is made that they ride as easily as a buggy with or without a load. The manufacturers state that the spring was thoroughly tested before being put on the market. It is now offered strictly on its merits, and every set is warranted to ride easy and to be durable.

CONTENTS.

The Sturtevant Blower. Illustrated ..	700
The Union switch and Signal Company.....	700
The Genesis of the Edgar Thomson Blast Furnaces.....	700
The World's Fair of 1893. Illustrated ..	771
The Oliver Chilled Plow Works.....	773
Weekly Pay Bill in Illinois.....	773
Uruguay's Commerce	773
The Farrel Foundry. Illustrated ..	774
San Francisco News	774
Quadruple-Expansion Engines for a Tug. II.	775
Reciprocity with Cuba.....	775
Amending the Conspiracy Laws.....	776
Armament for the New Ships	776
The Worthing Direct-Acting Steam Engine. Illustrated ..	777
New Publications.....	778
Labor Legislation in Germany	780
Economy of Water Motors.....	781
The Imperatori Process	781
The Week	781
Editorials:	
Col. S. B. Lowe.....	783
Southern Furnaces and Their Interest Charges.....	783
Transportation Through Canada	783
Business Questions and Politics.....	784
Forced Draft	784
The Tin-Plate Movement.....	785
Personal.....	785
Obituary.....	785
A Boston-Built Steel Bark.....	785
Washington News	786
The Southern Iron Furnaces	786
Industrial Stocks	787
Thomson-Houston Company.....	787
Maximum Steam Jacket Efficiency.....	787
Manufacturing: Iron and Steel, Machinery, Hardware, Miscellaneous.....	788-789
Trade Report: Chicago, Philadelphia, Pittsburgh, Louisville, Cincinnati, St. Louis, Cleveland, Detroit, Financial, New York, Coal Market, Metal Market, British Iron and Metal Markets, New York Metal Exchange.....	790-795
Hardware: Condition of Trade, Notes on Prices, Returned Goods, Trade Items, Electrical Goods for Hardwaremen, Joseph Rodgers & Sons' Agency, File Catalogue, Protection for Retailers, Price-Lists, Circulars, &c., Arrangement of Stores—Illustrated, It Is Reported—, Side Lines, Cycles, Sample Steel Goods Rack—Illustrated, Exports, Paints and Colors.....	796-805
New Calipers and Dividers. Illustrated.....	806
No. 427 Padlock. Illustrated.....	806
Lawn Mower Grass Carrier. Illustrated ..	806
Edwards' Orange Spoon. Illustrated ..	807
Gem Lawn Sweeper. Illustrated ..	807
Tripod Wash Bench. Illustrated ..	807
Perkins Toe Weight Shoe. Illustrated ..	808
Eagle Mill Pick. Illustrated ..	808
Perfection Burglar-Proof Key Fastener. II.	808
Diamond Safety Bicycle Name Plates. Illus.	808
The Standard Climax Cash Register. Illus.	809
I X L Bolster Spring. Illustrated ..	809
Current Hardware Prices	810-816
Current Metal Prices	817



Fig. 1.—I X L Bolster Spring.



Fig. 2.—I X L Bolster Spring.

chine. The check is placed in the opening in front of the machine; when the handle is depressed the check and the record are printed at the same time. In

it means that the sale below is a credit sale made by salesman A; B B would mean that salesman B made a credit sale; O O B would mean that salesman B made a sale of cigars to the amount below these let-

Chucks-	
Beach Pat., each, \$5.00.	20%
More's Adjustable, each, \$7.00.	30 ² /30 ⁴
Danbury. each, \$6.00.	30 ² /30 ⁴
Syracuse, Bar Pat.	25 ⁴
Graham Patent.	35 ⁴
Skinner's Patent Chucks.	
Combination Lathe Chucks.	25 ⁴
Universal Lathe Chucks.	40 ⁴
Independent Lathe Chucks.	40 ⁴
Drill Chucks.	15 ⁴
Union Mfg. Co.,	
Victor.	35 ⁴ , 25 ⁴
Combination.	40 ⁴
Universal.	40 ⁴
Independent.	40 ⁴
Churns.	
Tiffin Union, each, 5 gal. \$3.25; 7 gal., \$3.75; 10 gal. \$4.25.	
McDonald's Star Barrel Churn, each, 5 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal. \$3.25.	
Clamps-	
R. I. Tool Co.'s Wrought Iron.	25 ⁴
Adjustable, Cincinnati.	35 ² /30 ⁴
Adjustable, Hammers.	15 ⁴
Adjustable, Stearn's.	30 ² /30 ⁴ /10 ⁴
Stearn's Adjustable Cabinet and Cor- ner.	30 ² /30 ⁴ /10 ⁴
Cabinet Makers'.	60 ² /62 ⁴
Carriage Makers' Sargents'.	70 ² /72 ⁴
Carriage Makers' P. S. & W. Co.	40 ² /42 ⁴
Eberhard Mfg. Co.	40 ² /42 ⁴ /40 ⁴
Farwell, C. H. Besley & Co.	25 ⁴
Warner's.	40 ² /40 ⁴ /40 ⁴ /10 ⁴
Saw Clamps, see Vises, Saw Filers.	
Carpenters', Cincinnati.	25 ² /10 ⁴
Cleavers.	
Butchers'.	
Bradley's.	25 ² /30 ⁴
L. & J. J. White.	20 ² /25 ⁴
Beatty's.	40 ² /40 ⁴
New Haven Edge Tool Co.'s.	40 ⁴
P. S. & W.	35 ² /35 ⁴ /35 ⁴ /10 ⁴
Foster Bros.	30 ⁴
Schultz, Lohoff & Co.	40 ² /40 ⁴
Clips-	
Norway, Axle, 3 ⁴ & 5 ¹ 6.	55 ² /55 ⁴
End Grade Norway Axle, 3 ⁴ & 5 ¹ 6.	65 ² /65 ⁴
Superior Axle Clips.	60 ² /62 ⁴ /50 ⁷
Norway Spring Bar Clips, 5 ¹ 6.	50 ² /52 ⁴
Wrought-Iron Felice Clips.	5 ¹ 6, 5 ¹ 7
Steel Felice Clips.	5 ¹ 6
Baker Axle Clips.	5 ¹ 6
Cloth and Netting, Wire—See Wire, &c.	
Cockeyes.	50 ⁴
Cocks, Brass.	
Hardware list.	50 ² /25 ⁴
Coffee Mills—See Mills, Coffee.	
Collars, Dog, &c.	
Medford Fancy Goods Co.	40 ² /10 ⁴
Embossed, Gilt, Pope & Steven's list.	30 ² /10 ⁴
Leather, Pope & Steven's list.	40 ⁴
Brass, Pope & Steven's list.	40 ⁴
Chapman Mfg. Company.	50 ² /10 ⁴ /60 ⁴
Combs, Curry.	
Pitch's.	50 ² /10 ⁴ /50 ² /10 ⁴ /10 ⁴
Rubber, per doz \$10.00.	20 ⁴
Perfect.	50 ⁴
Compasses, Dividers, &c.—	
Compasses, Calipers, Dividers.	70 ² /70 ⁴
Bensis & Call Co.'s	
Dividers.	50 ² /51
Compasses & Calipers.	50 ² /51
Wing and Inside or Outside.	50 ² /51
Double.	60 ⁴
(Call's Pat., Inside).	30 ⁴
Excisor.	50 ⁴
J. Stevens & Co.'s.	25 ² /10 ⁴
Starrett's	
Spring Calipers and Dividers.	25 ² /10 ⁴
Lock Calipers and Dividers.	25 ⁴
Combination Dividers.	25 ⁴
Coopers' Tools—See Tools, Coopers'.	
Cord—	
Sash.	
Common.	5 ¹ 6 10 ² /11 ⁴
Patent, good quality.	5 ¹ 6 12 ² /13 ⁴
White Cotton Braided, fair.	5 ¹ 6 26 ² /27 ⁴
Common Russia Sash.	5 ¹ 6 13 ²
Patent.	5 ¹ 6 15 ²
Cable Laid Italian Sash.	5 ¹ 6 22 ² /23 ⁴
Indian Cable Laid.	5 ¹ 6 13 ²
Silver Cable—	
A Quality, White, 50 ⁴	10 ² /10 ⁴ /5 ¹ 6
A Quality, Drab, 55 ⁴	10 ² /10 ⁴ /5 ¹ 5
B Quality, White, 50 ⁴	25 ² /30 ⁴
B Quality, Drab, 55 ⁴	31 ² /33 ⁴
C Quality, White (only).	25 ² /27 ⁴
Sylvan Spring, Extra Braided, White.	34 ⁴
Sylvan Spring, Extra Braided, Drab.	36 ⁴
Semper Idem, Braided, White.	36 ⁴
Egyptian, India Hemp, Braided.	25 ⁴
Sanson—	
Braided, White Cotton, 50 ⁴	30 ² /30 ⁴ /25 ⁴
Braided, Drab Cotton, 55 ⁴	30 ² /30 ⁴ /25 ⁴
Braided, Italian Hemp, 55 ⁴	30 ² /30 ⁴ /25 ⁴
Braided, Linen, 50 ⁴	30 ² /30 ⁴ /25 ⁴
Tate & Co. Braided Wire, \$100 ft.	54 ⁴
Wire Picture.	
Braided or Twisted.	75 ² /10 ⁴
Corkscrews—See Screws, Cork.	
Corn Knives and Cutters—See Knives, Corn.	
Crackers, Nut—	
Table (H. & B. Mfg. Co.).	40 ⁴
Blake's Pattern.	\$ per doz \$2.00, 10 ⁴
Turner & Seymour Mfg. Co.	50 ⁴
Cradles—	
Grain.	50 ² /52 ⁴ /50 ² /10 ⁴
Crayons.	
White Crayons, 5 ¹ 6 12 ² /13 ⁴	10 ⁴
D. M. Stewart Mfg. Co., Metal Work- ers.	5 ¹ 6 50 ⁴
D. M. Stewart Mfg. Co., Rolling Mill.	25 ⁴
5 ¹ 6 52.50.	55 ⁴
See also, Chalk.	
Crow Bars—See Bars, Crow.	
Curry Combs—See Combs, Curry.	
Curtain Pins—See Pins, Curtain	
Cutters—	
Meat.	
Dixon's 7 ¹ 6 dos.	40 ² /5 ¹ 6
Nos.	1 2 3 4
\$14.00.	\$17.00 \$19.00 \$20.00
Woodruff's 7 ¹ 6 dos.	40 ² /5 ¹ 6
Nos.	10 ⁴ 15 ⁴
\$16.00.	\$18.00
Hales Pattern 7 ¹ 6 dos.	70 ² /70 ⁴ /5 ¹ 6
Nos.	11 12 13
\$27.00.	\$33.00 \$45.00
American.	30 ⁴
Nos.	1 2 3 4
Each.	5 ¹ 6 25 30 36
Enterprise.	30 ⁴
Nos.	10 12 25 45
Each.	42.50 44.50 46.50
Great American Meat Cutter.	30 ⁴
Nos.	112 116 118 120 122
Each.	\$20.25 \$27.50 \$30.00 \$25.50 \$40.00
Miller's Challenge 7 ¹ 6 dos.	45 ² /45 ⁴ /10 ⁴
Nos.	1 2 3
\$23.00.	\$30.00 \$40.00
Home No. 1.	7 ¹ 6 dos. \$26.00, 55 ² /10 ⁴
Draw Cut, each:	
Nos.	5 6 8
\$50.75 \$80.225.	20 ² /25 ⁴
Great American.	30 ⁴
Beef Shavers (Enterprise).	30 ² /10 ⁴
Little Giant.	50 ⁴
Chadborn's Smoked Beef Cutter, 7 ¹ 6 dos.	
Tobacco.	
Champion.	20 ² /10 ⁴ /30 ⁴
Wood Bottom.	\$ per doz \$5.00, \$5.25
All Iron.	\$ per doz \$4.25
Nashua Lock Co.'s.	\$ per doz \$18.00 \$20.50
Wilson's.	55 ⁴
Sargent's.	\$ per doz \$24, 55 ² /10 ⁴
Acme.	\$ per doz \$20, 40 ⁴
Washer.	
Smith's Pat.	\$ per doz \$12.00, 20 ² /10 ⁴ /10 ⁴
Johnson's.	\$ per doz \$11.00, 33 ⁴
Penny's.	\$ per doz \$14; Jap. \$16.00, 55 ⁴
Appleton's.	\$ per doz \$16.00, 20 ² /10 ⁴
Bonney's.	30 ² /10 ⁴
Cincinnati.	25 ² /10 ⁴
Cutlery—	
Pocket and Table.	Net prices
Wostenholm.	Now list in preparation
Dampers, &c.—	
Damper, Buffalo.	40 ² /10 ⁴
Buffalo Damper Clips.	40 ² /10 ⁴
Crown Damper.	40 ⁴
Excisor.	40 ² /10 ⁴
Diggers, Post Hole, &c.—	
Samson Post Hole Digger, 7 ¹ 6 dos.	60 ⁴
Fletcher Post Hole Augers, 7 ¹ 6 dos.	20 ² /25 ⁴
Eureka Diggers.	\$ per doz \$12.50/14 ⁴
Leed's.	\$ per doz \$8.00/9.00
Vaughn's Post Hole Auger, 7 ¹ 6 dos.	
Kohler's Little Giant.	\$ per doz \$18.00
Kohler's Hercules.	\$ per doz \$15.00
Kohler's New Champion.	\$ per doz \$20.00
Schneidler.	\$ per doz \$15.00
Ryan's Post Hole Diggers.	\$ per doz \$24.00
Cronk's Post Bars, 7 ¹ 6 dos.	\$60.00
50 ² /55 ⁴ /50 ² /10 ⁴	
Gibbs Post Hole Digger, 7 ¹ 6 dos.	\$30.00, 50 ⁴
Imperial, 7 ¹ 6 dos.	45 ⁴
Divers—	
See Compasses.	
Dog Collars—See Collars, Dog, &c.	
Door Springs—See Springs, Door.	
Drawers.	
Money, 7 ¹ 6 dos.	18 ² /20 ⁴
Drawing Knives—See Knives, Drawing.	
Drills and Drill Stacks—	
Blacksmiths'.	each \$1.75
Blacksmiths' Self-Feeding, each \$7.50, 20 ⁴	
Breast, P. S. & W.	40 ² /10 ⁴
Breast, Wilson's.	30 ² /5 ¹ 6
Breast, Miller's Falls.	each \$3.00, 25 ⁴
Breast, Bartholomew's.	each \$2.50, 25 ² /10 ⁴
Ratchet, Merrill's.	20 ² /20 ⁴
Ratchet, Ingerson's.	25 ⁴
Ratchet, Parker's.	30 ² /20 ⁴
Ratchet, Whitney's.	20 ² /10 ⁴
Ratchet, Weston's.	20 ² /25 ⁴
Ratchet, Moore's Triple Action.	45 ² /50 ⁴
Ratchet, Curtis & Curtis.	30 ⁴
Whitney's Hand Drill, Plain.	\$1.00; Adjustable.
Adjustable.	20 ² /10 ⁴
Wilson's Drill Stocks.	10 ⁴
Automatic Boring Tools.	\$1.75/1.85
Morse.	50 ² /10 ⁴ /25 ⁴
Standard.	50 ² /10 ⁴ /25 ⁴
Syracuse (Metal list).	50 ² /10 ⁴
Cleveland.	50 ² /10 ⁴ /25 ⁴
Williams.	50 ² /10 ⁴ /25 ⁴
New Process.	50 ² /10 ⁴ /25 ⁴
Graham's Pat. Groove Shank.	50 ² /10 ⁴
Drill Bits—See Augers and Bits.	
Drill Chucks—See Chucks.	
Dripping Pans—See Pans, Dripping.	
Drivers, Screw.	
Douglas Mfg. Co.	20 ² /20 ⁴
Diaslon's.	50 ² /10 ⁴
Buck Bros.	30 ⁴
Stanley R. & L. Co.'s Varnished Handles.	65 ² /10 ⁴
Black Handles.	65 ² /10 ⁴
Sargent & Co.'s	
1. 1 Forged Blade.	60 ² /10 ⁴ /10 ⁴
Nos. 20, 25 and 30.	60 ² /10 ⁴ /10 ⁴
P. S. & W.	60 ² /10 ⁴
Knapp & Cowles:	
No. 1.	60 ² /10 ⁴ /10 ⁴
No. 2.	60 ² /10 ⁴ /10 ⁴
No. 3.	60 ² /10 ⁴ /10 ⁴
Nos. 4 and 60, Acme and Ideal.	50 ² /10 ⁴ /10 ⁴
Stearns'	
Drill Bits.	25 ² /10 ⁴
Gay & Parsons.	35 ⁴
Clark's Pat.	25 ² /10 ⁴
Crawford's Adjustable.	30 ² /20 ⁴
Ellrich's Socket and Ratchet.	25 ² /10 ⁴
Allard's Spiral, new list.	25 ⁴
Koll's Common Sense Edger.	30 ² /20 ⁴ /10 ⁴
Syracuse Screw-Driven Bits.	30 ² /20 ⁴
Screw-Driven Bits.	50 ² /75 ⁴
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.	
Warner's Screen Corner Irons.	33 ² /34 ⁴
Stearns' Frames and Corners.	33 ² /34 ⁴
Freezers, Ice Cream—	
White Mountain.	60 ² /64 ⁴
Granite State.	65 ² /65 ⁴
Arctic.	70 ² /70 ⁴
American.	60 ⁴
Buffalo Champion.	60 ² /62 ⁴
Buffalo's Lightning.	60 ² /62 ⁴
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.	
Warner's Screen Corner Irons.	33 ² /34 ⁴
Stearns' Frames and Corners.	33 ² /34 ⁴
Freezers, Ice Cream—	
White Mountain.	60 ² /64 ⁴
Granite State.	65 ² /65 ⁴
Arctic.	70 ² /70 ⁴
American.	60 ⁴
Buffalo Champion.	60 ² /62 ⁴
Buffalo's Lightning.	60 ² /62 ⁴
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.	
Warner's Screen Corner Irons.	33 ² /34 ⁴
Stearns' Frames and Corners.	33 ² /34 ⁴
Freezers, Ice Cream—	
White Mountain.	60 ² /64 ⁴
Granite State.	65 ² /65 ⁴
Arctic.	70 ² /70 ⁴
American.	60 ⁴
Buffalo Champion.	60 ² /62 ⁴
Buffalo's Lightning.	60 ² /62 ⁴
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.	
Warner's Screen Corner Irons.	33 ² /34 ⁴
Stearns' Frames and Corners.	33 ² /34 ⁴
Freezers, Ice Cream—	
White Mountain.	60 ² /64 ⁴
Granite State.	65 ² /65 ⁴
Arctic.	70 ² /70 ⁴
American.	60 ⁴
Buffalo Champion.	60 ² /62 ⁴
Buffalo's Lightning.	60 ² /62 ⁴
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.	
Warner's Screen Corner Irons.	33 ² /34 ⁴
Stearns' Frames and Corners.	33 ² /34 ⁴
Freezers, Ice Cream—	
White Mountain.	60 ² /64 ⁴
Granite State.	65 ² /65 ⁴
Arctic.	70 ² /70 ⁴
American.	60 ⁴
Buffalo Champion.	60 ² /62 ⁴
Buffalo's Lightning.	60 ² /62 ⁴
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.	
Warner's Screen Corner Irons.	33 ² /34 ⁴
Stearns' Frames and Corners.	33 ² /34 ⁴
Freezers, Ice Cream—	
White Mountain.	60 ² /64 ⁴
Granite State.	65 ² /65 ⁴
Arctic.	70 ² /70 ⁴
American.	60 ⁴
Buffalo Champion.	60 ² /62 ⁴
Buffalo's Lightning.	60 ² /62 ⁴
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.	
Warner's Screen Corner Irons.	33 ² /34 ⁴
Stearns' Frames and Corners.	33 ² /34 ⁴
Freezers, Ice Cream—	
White Mountain.	60 ² /64 ⁴
Granite State.	65 ² /65 ⁴
Arctic.	70 ² /70 ⁴
American.	60 ⁴
Buffalo Champion.	60 ² /62 ⁴
Buffalo's Lightning.	60 ² /62 ⁴
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.	
Warner's Screen Corner Irons.	33 ² /34 ⁴
Stearns' Frames and Corners.	33 ² /34 ⁴
Freezers, Ice Cream—	
White Mountain.	60 ² /64 ⁴
Granite State.	65 ² /65 ⁴
Arctic.	70 ² /70 ⁴
American.	60 ⁴
Buffalo Champion.	60 ² /62 ⁴
Buffalo's Lightning.	60 ² /62 ⁴
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.	
Warner's Screen Corner Irons.	33 ² /34 ⁴
Stearns' Frames and Corners.	33 ² /34 ⁴
Freezers, Ice Cream—	
White Mountain.	60 ² /64 ⁴
Granite State.	65 ² /65 ⁴
Arctic.	70 ² /70 ⁴
American.	60 ⁴
Buffalo Champion.	60 ² /62 ⁴
Buffalo's Lightning.	60 ² /62 ⁴
Screen, Window and Door—	
Porter's Pat. Window and Door Frame.	
Warner's Screen Corner Irons.	33 ² /34 ⁴
Stearns' Frames and Corners.	33 ² /34 ⁴
Freezers, Ice Cream—	

Boggins's Latches.....	70¢	dos 30¢ & 35¢
Bronze Iron Drop Latches.....	70¢	dos 70¢ net
Jap'd Store Door Handles—Nuts, \$1.00;		Plate, \$1.10; no Plate, \$0.85.....
Barn Door, \$1.40.....	10¢ & 10¢	
Chest and Lifting.....	70¢	
Wood—		
Saw and Plane.....	40 & 10¢	40 & 10¢ & 5¢
Hammer, Hatchet, Axe, Sledge, &c., 40¢		
Brad Awl.....	70¢	gr \$2.00
Hickory Firmer Chisel, ass'd, \$ gr 4.50		
Hickory Firmer Chisel, large, \$ gr 5.00		
Apple Firmer Chisel, ass'd, \$ gr 6.00		
Socket Firmer Chisel, ass'd, \$ gr 8.00		
Socket Framing Chisel, ass'd, \$ gr 6.00		
J. S. Smith & Co.'s Pat File.....	50¢	
File, assorted.....	75¢	gr 75¢
Auger, assorted.....	50¢	gr 5.00
Auger, large.....	70¢	gr 7.00
Pat. Auger, Douglass.....		set \$1.21
Pat. Auger, Swan's.....		set \$1.00
Hoe, Rake, Shovel, &c.	50¢ & 10¢	g
Hangers—		
Barn Door, old patterns.....	60 & 10¢ & 10¢	70¢
Barn Door, New England.....	60 & 10¢ & 10¢	70¢
Samson Steel Anti-Friction.....	55¢	
Orleans Steel.....	55¢	
Hamilton Wrought Wood Track.....	55¢	
U. S. Wood Track.....	65¢	
Champion.....	60 & 10¢	
Rider and Wooster, Medina Mfg. Co.'s list.....	70¢	
Olimax Anti-Friction.....	55¢	
Omega Anti-Friction for Wood Track.....	55¢	
Zeith for Wood Track.....	55¢	
Red's Steel Arm.....	50¢	
Change, Barn Door.....	50¢	
Sterling.....	50 & 10¢ & 10¢	
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	50 & 10¢ & 20¢	
Cherubite.....	50 & 10¢	
Kiddie's.....	50 & 10¢ & 60¢	
The Boss.....	60 & 10¢	
Best Anti-Friction.....	60 & 10¢	
Duplex (Wood Track).....	60 & 10¢ & 5¢	
Terry's Pat., \$ dos pr 4 in., \$18.00—5 in., \$19.00.....	50 & 10¢ & 10¢	
Terry's Steel Anti-Friction Leader.....	50 & 10¢	
Terry's Steel Anti-Friction Ideal.....	50 & 10¢	
Cronk's Patent, Steel Covered.....	50 & 5¢	
Wood Track Iron Clad, \$ ft, 10¢.....	50	
Carrier Steel Anti-Friction.....	50 & 10¢	
Architect, \$ set \$6.00.....	20¢	
Ellipse.....	20¢ & 10¢	
Felix, \$ set \$4.50.....	20¢	
Richards'.....	30¢ & 60¢ & 10¢	
Lane's Standard.....	50 & 2¢ & 50 & 10¢	
Lane's New Standard.....	50 & 2¢ & 5¢	
Ball Bearing Door Hanger, 20 & 10¢ & 25 & 10¢		
Warner's Pat., 20 & 10¢ & 20 & 10¢ & 10¢		
Stearns' Anti-Friction, 20 & 10¢ & 20 & 10¢ & 10¢		
Stearns' Challenge, 25 & 10¢ & 25 & 10¢ & 10¢		
Faultless.....	40 & 10¢ & 5¢	
American, \$ set \$6.00.....	20¢ & 10¢	
Rider & Wooster, No. 1, \$24.50; No. 2, 75¢.....	40¢	
Paragon, Nos. 1, 2 and 3.....	40 & 10¢	
Cincinnati.....	55¢ & 10¢	
Paragon, Nos. 5, 6, 7, 8, 9.....	20 & 10¢	
Crescent.....	60 & 60¢ & 10¢	
Nickel Cast Iron.....	50¢	
Nickel, Malleable Iron and Steel.....	40¢	
Skratton Anti-Friction Single Strap 38 & 45¢		
Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....	45¢	
Star.....	40 & 10¢ & 40 & 10¢ & 5¢	
May.....	50 & 5¢ & 50 & 10¢	
Parry, \$6.00.....	40 & 10¢	
Interstate.....	50¢	
Magic.....	45¢	
Harness Snaps—See Snaps.		
Hatchets—		
American Axe and Tool Co.		
Blood's.....		
Hunt's.....		
Hurd's.....		
Mann's.....		
Peck's.....		
Underhill's.....	40 & 10¢	
Buffalo Hammer Co.	20¢	
Fayette R. Plumb, C. Hammond & Son.....	50 & 25¢	
Kelly's.....		
Sargent & Co. P. S. & W. Co.		
Ten Eyck Edge Tool Co.	10¢	
Collins.....		
Shulte, Lohoff & Co.	50¢ & 50¢ & 5¢	
Hay and Straw Knives—See Knives.		
Hinges—		
Blind Hinges—		
Parker.....	75¢ & 25¢	
Palmer.....	50¢ & 5¢ & 10¢	
Seymour.....	70¢ & 10¢	
Buffet.....	50¢	
Clark's, Nos. 1, 2, 3, 40 and 50.....		
Clark's Mortise Gravity.....	60¢	
Sargent's, Nos. 1, 3, 5, 11, 13.....	75¢ & 10¢ & 55¢ & 10¢ & 5¢	
Sargent's, No. 13.....	77 & 10¢ & 10¢	
Reading's Gravity.....	75¢ & 10¢ & 75¢	
Shepard's Noiseless.....	75 & 10¢	
Niagara.....	80¢	
Buffalo.....	80¢	
Clark's Genuine Pattern.....	80¢	
O. S. Lull & Porter.....	75 & 10¢	
Acme, Lull & Porter.....	75¢	
Queen City Reversible, 70 & 10¢ & 75¢		
Clark's Lull & Porter, Nos. 0, 1, 14, 2, 24, 34.....	76 & 10¢ & 24¢	
Wright's Automatic Blind Fixtures, Nos. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....	10¢	
Gate Hinges—		
Western.....	70¢	dos \$4.40, 60¢
N. E. Reversible.....	70¢	dos \$7.00, 55¢
E. E. Reversible.....	70¢	dos \$5.20, 55¢ & 10¢
Clark's Nos. 1, 2, 3.....	60 & 10¢ & 5¢	
W. Y. State.....	70¢	dos \$5.00, 55¢, 50¢
Automatic.....	70¢	dos \$12.50, 50¢
Common Sense.....	70¢	dos pair \$4.50, 50¢
Seymour's.....	70¢ & 10¢ & 10¢	
Shepard's.....	70¢ & 10¢ & 5¢	
Reed's Latch and Hinges, \$ dos \$12.00.....	50¢	
Spring Hinges—		
Union Spring and Blank Butts.....	40¢	
Year's Spring Hinge Co.'s list, March 1890.....	20¢	
Indurated Fiber—Ware—See Indurated Fiber.		
Irons—		
Sad—		
From 4 to 10, at factory.....	100¢	
Self-Heating.....	70¢	dos \$9.00 net
Self-Heating, Tailors'.....	70¢	dos \$18.00 net
Mrs. Pott's Irons.....	50 & 5¢	
Enterprise Star Irons.....	50 & 5¢	
XX Cold Handle Sad Irons.....	50 & 25¢	
Ideal Irons new list 50 & 10¢ & 10¢		
Salamander, Irons.....	25¢	
B. B. Sad Irons, \$ gr 5 & 10¢		
Combined Fluter and Sad Iron, \$ dos, \$15.00.....	15¢	
Fox Reversible, Self-Fluter \$ dos \$24.00.....		
Chinese Laundry (N. E. Butt Co.) 85¢, 15¢		
New England.....	5¢, 15¢	
Mahony's Troy Pol. Irons.....	25¢	
Sensible, list Jan. 91.....	50 & 10¢ & 5¢	
National Tailor's Irons.....	55¢ & 2¢	
National Self-Heating.....	50¢	
Soldering—		
Soldering Coppers.....	70¢	22 & 23¢
Cover's Adjustable, list Jan. 1, 1891.....		23¢
Irons, Pinking, per dos, 65¢		
Jack Screws—See Screws.		
Jacks, Wagon.		
Daisy.....	33¢ & 5¢	
Victor.....	33¢ & 5¢	
Kettles—		
Brass, Spun, Plain, list Jan. 1, '91, "5 & 5¢		
Brass, Spun, Plated, W. M. list Jan. 1, '91, 20¢		
Enamelled and Tea—See Hollow Ware.		
Keys—		
Lock Assoc's list Dec. 30, 1886.....	50 & 10¢	
Locks, Nos. 36 to 39.....	60 & 5¢	
Deits, Nos. 51 to 63.....	60 & 10¢	
Deits, Nos. 86 to 96.....	60 & 10¢	
Stoddard Lock Co. "Champion" Night Latches.....	40¢	
Barnes Mfg. Co. "Champion" Night Latches.....	40¢ & 10¢	
Eagle and Corbin Trunk.....	25¢ & 25¢	
"Champion" Cab. and Combination.....	33¢ & 5¢	
Yale.....	net prices	
Romer's.....	25¢	
Door Locks, Latches, &c.—		
R. & E. Mfg. Co. list Mar. 20, 1890.....	65 & 10¢ & 70¢	
Mailly, Wheeler & Co. list July, '88.....	Much	
Sargent & Co. list Aug. 1, '88.....	lower net prices	
Reading Hardware Co. list Feb. 2, '88.....	often made	
Brittan, Graham & Mathes, list Jan. 1890.....	60 & 10¢ & 10¢	
Perkins' Burglar Proof.....	60 & 25¢	
Plate.....	33¢ & 25¢	
Barnes Mfg. Co. list July, '88.....	40¢ & 40¢ & 10¢	
Yale.....	net prices	
Delta Flat Key.....	30¢	
L. & C. Round Key Latches.....	30¢ & 10¢	
L. & C. Flat Key Latches.....	33¢ & 10¢	
Romer's Night Latches.....	15¢	
Shepardson or U. S. Seed's N. Y. Hasp Lock.....	35¢	
Padlocks—		
List Dec. 23, '84.....	75 & 10¢	
Brittan, Graham & Mathes.....	70 & 10¢	
Yale Lock Mfg. Co. list July, '88.....	net prices	
Eagle.....	25¢ & 25¢	
Eureka, Eagle Lock Co. list Aug. 1, '88.....	40¢ & 40¢ & 10¢	
Romer's, Nos. 0 to 91.....	30¢	
Romer's Scandinavian, &c. Nos. 100 to 1000.....	50¢, 15¢	
A. E. Deits.....	40¢	
Champion Padlocks.....	40¢	
Hotchkiss.....	40¢	
Star.....	40¢	
Horseshoe.....	40¢ & 40¢ & 10¢	
Barnes Mfg. Co. list Aug. 1, '88.....	40¢ & 40¢ & 10¢	
Nock's.....	40¢	
Brown's Pat. "Scandinavian" 10¢, 20¢, 50¢ & 100¢		
E. T. Frazee's Keystone Scandinavian, Nos. 110, 150, 180 and 140.....	50¢ & 10¢	
Other Nos. 100 to 150.....	50¢	
Almes Sword Co. up to No. 150.....	40¢	
Almes Sword Co. above No. 150.....	50¢	
Almes Sword & Co. 10, 1010 line.....	55¢	
No. 41 line.....	55¢ & 10¢	
No. 61 line.....	50¢ & 5¢	
No. 21 line.....	75¢	
Sash, &c.—		
Clark's, No. 1, \$10; No. 2, \$8 9 gr.	33¢ & 5¢	
Ferguson's.....	33¢ & 5¢	
Morris and Triumph, list Aug. 16, 1890.....	60¢ & 10¢	
Victor.....	60¢ & 10¢	
Walker's.....	60¢ & 10¢	
Attwell Mfg. Co. list Aug. 1, '88.....	25¢ & 25¢	
Reading.....	50¢ & 10¢ & 60¢ & 10¢	
Hammond's Window Springs.....	40¢	
Common Sense, Jap'd, Cop'd and Br'sed.....	gr 4¢	
Common Sense, Nickel Plated.....	gr 10¢	
Universal.....	50¢	
Kempshall's Gravity.....	50¢	
Kempshall's Model.....	50¢ & 10¢ & 10¢	
Corbin's Door, list Feb. 15, 1890.....	70¢	
Dayson's Patent.....	60¢ & 60¢ & 10¢	
Huguenin's Sach Balances.....	25¢ & 5¢	
Huguenin's New Sach Locks.....	25¢ & 5¢	
Stoddard's "Practical" Iron.....	10¢	
Liesche's Nos. 100 and 110, \$ gr 25¢		
105, \$10.00.....	20 & 10¢	
Davis, Bronze, Barnes Mfg. Co. list Aug. 1, 1890.....	50¢	
Champion Safety, list March 1, 1890.....	55¢ & 55¢	
Security Buckeye.....	70¢	
Buckeye.....	70¢	
Lumber Tools—See Tools, Lumber		
Lustre—		
Four-ounce Bottles....	70¢	
gross.....	\$17.00	
Machines—		
Boring—		
Without Angers, Upright, Angular.		
Douglas, \$ gr 5.50, 6.75, 7.50 & 10 & 10¢		
Saels' Lice's Pat. 5.50, 6.75, 7.50 & 10 & 10¢		
Jennings.....	5.50, 6.75, 7.50 & 10 & 10¢	
Other Machines.....	2.25 & 2.75	
Phillips' Patent with Angers.....	7.00, 7.50	
Miller's Falls.....	7.50	
Fluting—		
Knox, 4½-inch Rolls.....	13.25 each	
Knox, 6-inch Rolls.....	13.00 each	
Eagle, 3½-inch Roll.....	12.15	
Eagle, 5½-inch Roll.....	12.85	
Crown, 3½ in., \$8.50, 6 in., \$4.00; 8 in., \$6.00		
\$6.50 each		
Crown Jewels, 6 in.....	\$15.00 each	
American, 5 in., \$5.00; 6 in., \$4.40; 7 in., \$4.50 each		
Domestic Fluter.....	each, \$1.50	
Geneva Hand Fluter, White Metal.....	70¢	
Crown Hand Fluter, Nos. 1, \$15.00—		
\$12.50, 3, \$10.00.....		
Shepard Hand Fluter, No. 65 \$ dos 15 & 20¢		
15 & 20¢		

Scheid Hand Fluter, No. 110		110	dos
Shepard Hand Fluter, No. 95	40%	40%	
Clark's Hand Fluter, \$ dos	35%	35%	
Combined Fluter and Sad Iron,			
Buffalo	dos \$15.00	30%	
Hoisting—			
Moore's Hard Hoist, with Lock			
Brake, 20%	20%		
Moore's Differential Pulley Block,	40%		
Energy Mfg. Co's.	25%		
Surf Grip Steel Tackle Blocks	25%		
Washing—			
Anthony Wayne, \$ dos No. 1, \$51; No. 2, \$15; No. 3, \$42			
Mallets.			
Hickory	20&10/20&20&10/10		
Lignumvitae	20&10/20&20&10/10		
S. & L. Block Co., Hickory & L. V.	30&30/20&10		
Mattocks. Regular list.	60&10/60&10/55		
Measures—			
Standard Fiberware, No. 1, peck, \$ dozen, \$4; 1/4-deck, \$3.50.			
Meat Cutters—See Cutters, Meat.			
Mills.			
Coffee—			
Box and Side, List Jan. 1, 1888	60&35		
American, Enterprise Mfg Co. 20&10/40&30			
The Swift, Lane Bros.	20&10/40		
Mincing Knives—See Knives, Mincing.			
Molasses Gates—See Gates, Molasses.			
Money Drawers—See Drawers, Money.			
Mowers, Lawn.			
Pennsylvania New Model, Excelsior, Continental, &c.	60&60/55		
Philadelphia	60&10/		
Other Machines.	60&10/5&70		
Muzzles—			
Safety.	\$ dos, \$3.00, 25%		
Nails.			
Cut and Wire. See Trade Report.			
Wire Nails, Papered.			
Association list, July 15 '89.	75&104		
Tack Mfrs' list.	704		
Wire Nails, Standard Penny.			
Card June 1, '89, base.	\$2.30	2.33	
Horse—			
Nos. 6, 7, 8, 9, 10			
Ausable.	28&26 25&24 24 23.		
Clinton, Pin.	19&17 16 15 14.	30%	
Essex	28&26 25 24 24 23.		
	25&10/25&10/10		
Lyra	19&17 16 15 14.	30%	
Snowden	19&17 16 15 14.	30%	
Putnam.	23&21 26 19 16 14.		
	1000 in. in year 15		
Vulcan.	23&21 26 19 16 14.	12&25	
Northwest.	23&23 22 21 20 19.		
Globe.	23&21 26 19 16 14.	20&55	
Boston.	23&21 26 19 16 14.	20&55	
A. C.	25 23 22 21 21.		
	25&10/23&10/23		
C. B.-K.	25 23 22 21 21.		
	25&10/23&10/23		
Maud S.	25 23 22 21 21.		
Champlain	23&6 22 21 20 19.	40&10	
New Haven.	23 26 25 24 23.		
	25&25&25/20&10/10		
Saranac.	23 21 26 19 16 14.	30&10	
Champion.	25 23 22 21 20.		
	10&10/10		
Capewell.	23 26 19 16 14.		
	35&21/35&10/		
Star.	23 21 19 16 14.		
	10&10/10/10		
Anchor.	23 21 26 19 16 14.	35%	
Western.	23 21 26 19 16 14.	40&10	
Empire Bronzed.	14 \$ dos.		
Picture—			
Brass Head, Sargent's list.	50&10/10		
Brass Head, Combination list.	50&10		
Porcelain Head, Sargent's list.	50&10/6&10		
Porcelain Head, Combination list.	40&10/6		
Niles' Patent.	40%		
Nail Pullers.—See Pullers, Nail.			
Nail Sets.—See Sets, Nail.			
Nut Crackers.—See Crackers, Nut.			
Nuts.—List Dec. 18, 1889.			
Square, Hex.			
Hot Pressed.	5.40¢	6.00¢ off list.	
Cold Pressed.	5.00¢	5.10¢ off list.	
in packages of 100 lb. add 1-10¢ \$.			
net: in packages less than 100 lb. add			
2¢ per lb.			
Oakum—			
Best.	\$ B 74&07/4		
U. S. Navy.	\$ B 64&6/4		
Navy.	\$ B 68&6/4		
Oilers—			
Zinc and Tin.	65&10/70/70		
Brass and Copper.	60&10/60&10/60		
Malleable, Hammers' Improved, No. 1,			
\$6, No. 2, \$4.00; No. 3, \$4.40 per doz.			
	10&10/25		
Malleable, Hammers, Old Pattern, same			
list.	40%		
Prior's Pat. or "Paragon" Zinc.	60&10/20/10		
Brass and Tin and Zinc.	50%		
Olmstead's Brass and Copper.	50%		
Broughton's Zinc.	50%		
Bro. zinc's Brass.	50%		
Gem P. D. & Co.	50%		
Steel, Draper and Williams.	50%		
Openers, Can.			
Messenger's Comet.	\$ dos \$5.00, 25%		
American.	\$ dos \$3.00, 25%		
Duplex.	dos 25, 15/20		
Lyman's.	dos \$8.75, 20%		
No. 4 French.	\$ dos 22.5, 25.5/20		
No. 5, Iron Handle.	\$ dos 24.00, 45/50		
Eureka.	\$ dos 22.50, 10%		
Barbina Scissors.	\$ dos 22.75/23.0,		
Star.			
Sprague, No. 1 \$2.00, 2.25/2.30, 2.35/2.40.			
Excelsior No. 1 \$2.50; No. 2, \$1.50, 4/5.			
Excelsior Hand Fluter, No. 110	110		
Shepard Hand Fluter, No. 95	40%		
Clark's Hand Fluter.	40%		
Combined Fluter and Sad Iron.	35%		
Buffalo	dos \$15.00, 30%		
Hoisting—			
Moore's Hard Hoist, with Lock			
Brake.	20%		
Moore's Differential Pulley Block.	40%		
Energy Mfg. Co's.	25%		
Surf Grip Steel Tackle Blocks	25%		
Washing—			
Anthony Wayne, \$ dos No. 1, \$51; No. 2, \$15; No. 3, \$42			
Mallets.			
Hickory	20&10/20&20&10/10		
Lignumvitae	20&10/20&20&10/10		
S. & L. Block Co., Hickory & L. V.	30&30/20&10		
Mattocks. Regular list.	60&10/60&10/55		
Measures—			
Standard Fiberware, No. 1, peck, \$ dozen, \$4; 1/4-deck, \$3.50.			
Meat Cutters—See Cutters, Meat.			
Mills.			
Coffee—			
Box and Side, List Jan. 1, 1888	60&35		
American, Enterprise Mfg Co. 20&10/40&30			
The Swift, Lane Bros.	20&10/40		
Mincing Knives—See Knives, Mincing.			
Molasses Gates—See Gates, Molasses.			
Money Drawers—See Drawers, Money.			
Mowers, Lawn.			
Pennsylvania New Model, Excelsior, Continental, &c.	60&60/55		
Philadelphia	60&10/		
Other Machines.	60&10/5&70		
Muzzles—			
Safety.	\$ dos, \$3.00, 25%		
Nails.			
Cut and Wire. See Trade Report.			
Wire Nails, Papered.			
Association list, July 15 '89.	75&104		
Tack Mfrs' list.	704		
Wire Nails, Standard Penny.			
Card June 1, '89, base.	\$2.30	2.33	
Horse—			
Nos. 6, 7, 8, 9, 10			
Ausable.	28&26 25&24 24 23.		
Clinton, Pin.	19&17 16 15 14.	30%	
Essex	28&26 25 24 23.		
	25&10/25&10/10		
Lyra	19&17 16 15 14.	30%	
Snowden	19&17 16 15 14.	30%	
Putnam.	23&21 26 19 16 14.		
	1000 in. in year 15		
Vulcan.	23&21 26 19 16 14.	12&25	
Northwest.	23&23 22 21 20 19.		
Globe.	23&21 26 19 16 14.	20&55	
Boston.	23&21 26 19 16 14.	20&55	
A. C.	25 23 22 21 21.		
	25&10/23&10/23		
C. B.-K.	25 23 22 21 21.		
	25&10/23&10/23		
Maud S.	25 23 22 21 21.		
Champlain	23&6 22 21 20 19.	40&10	
New Haven.	23 26 25 24 23.		
	25&25&25/20&10/10		
Saranac.	23 21 26 19 16 14.	30&10	
Champion.	25 23 22 21 20.		
	10&10/10		
Capewell.	23 26 19 16 14.		
	35&21/35&10/		
Star.	23 21 19 16 14.		
	10&10/10/10		
Anchor.	23 21 26 19 16 14.	35%	
Western.	23 21 26 19 16 14.	40&10	
Empire Bronzed.	14 \$ dos.		
Picture—			
Brass Head, Sargent's list.	50&10/10		
Brass Head, Combination list.	50&10		
Porcelain Head, Sargent's list.	50&10/6&10		
Porcelain Head, Combination list.	40&10/6		
Niles' Patent.	40%		
Nail Pullers.—See Pullers, Nail.			
Nail Sets.—See Sets, Nail.			
Nut Crackers.—See Crackers, Nut.			
Nuts.—List Dec. 18, 1889.			
Square, Hex.			
Hot Pressed.	5.40¢	6.00¢ off list.	
Cold Pressed.	5.00¢	5.10¢ off list.	
in packages of 100 lb. add 1-10¢ \$.			
net: in packages less than 100 lb. add			
2¢ per lb.			
Oakum—			
Best.	\$ B 74&07/4		
U. S. Navy.	\$ B 64&6/4		
Navy.	\$ B 68&6/4		
Oilers—			
Zinc and Tin.	65&10/70/70		
Brass and Copper.	60&10/60&10/60		
Malleable, Hammers' Improved, No. 1,			
\$6, No. 2, \$4.00; No. 3, \$4.40 per doz.			
	10&10/25		
Malleable, Hammers, Old Pattern, same			
list.	40%		
Prior's Pat. or "Paragon" Zinc.	60&10/20/10		
Brass and Tin and Zinc.	50%		
Olmstead's Brass and Copper.	50%		
Broughton's Zinc.	50%		
Bro. zinc's Brass.	50%		
Gem P. D. & Co.	50%		
Steel, Draper and Williams.	50%		
Openers, Can.			
Messenger's Comet.	\$ dos \$5.00, 25%		
American.	\$ dos \$3.00, 25%		
Duplex.	dos 25, 15/20		
Lyman's.	dos \$8.75, 20%		
No. 4 French.	\$ dos 22.5, 25.5/20		
No. 5, Iron Handle.	\$ dos 24.00, 45/50		
Eureka.	\$ dos 22.50, 10%		
Barbina Scissors.	\$ dos 22.75/23.0,		
Star.			
Sprague, No. 1 \$2.00, 2.25/2.30, 2.35/2.40.			
Excelsior No. 1 \$2.50; No. 2, \$1.50, 4/5.			
Excelsior Hand Fluter, No. 110	110		
Shepard Hand Fluter, No. 95	40%		
Clark's Hand Fluter.	40%		
Combined Fluter and Sad Iron.	35%		
Buffalo	dos \$15.00, 30%		
Hoisting—			
Moore's Hard Hoist, with Lock			
Brake.	20%		
Moore's Differential Pulley Block.	40%		
Energy Mfg. Co's.	25%		
Surf Grip Steel Tackle Blocks	25%		
Washing—			
Anthony Wayne, \$ dos No. 1, \$51; No. 2, \$15; No. 3, \$42			
Mallets.			
Hickory	20&10/20&20&10/10		
Lignumvitae	20&10/20&20&10/10		
S. & L. Block Co., Hickory & L. V.	30&30/20&10		
Mattocks. Regular list.	60&10/60&10/55		
Measures—			
Standard Fiberware, No. 1, peck, \$ dozen, \$4; 1/4-deck, \$3.50.			
Meat Cutters—See Cutters, Meat.			
Mills.			
Coffee—			
Box and Side, List Jan. 1, 1888	60&35		
American, Enterprise Mfg Co. 20&10/40&30			
The Swift, Lane Bros.	20&10/40		
Mincing Knives—See Knives, Mincing.			
Molasses Gates—See Gates, Molasses.			
Money Drawers—See Drawers, Money.			
Mowers, Lawn.			
Pennsylvania New Model, Excelsior, Continental, &c.	60&60/55		
Philadelphia	60&10/		
Other Machines.	60&10/5&70		
Muzzles—			
Safety.	\$ dos, \$3.00, 25%		
Nails.			
Cut and Wire. See Trade Report.			
Wire Nails, Papered.			
Association list, July 15 '89.	75&104		
Tack Mfrs' list.	704		
Wire Nails, Standard Penny.			
Card June 1, '89, base.	\$2.30	2.33	
Horse—			
Nos. 6, 7, 8, 9, 10			
Ausable.	28&26 25&24 24 23.		
Clinton, Pin.	19&17 16 15 14.	30%	
Essex	28&26 25 24 23.		
	25&10/25&10/10		
Lyra	19&17 16 15 14.	30%	
Snowden	19&17 16 15 14.	30%	
Putnam.	23&21 26 19 16 14.		
	1000 in. in year 15		
Vulcan.	23&21 26 19 16 14.	12&25	
Northwest.	23&23 22 21 20 19.		
Globe.	23&21 26 19 16 14.	20&55	
Boston.	23&21 26 19 16 14.	20&55	
A. C.	25 23 22 21 21.		
	25&10/23&10/23		
C. B.-K.	25 23 22 21 21.		
	25&10/23&10/23		
Maud S.	25 23 22 21 21.		
Champlain	23&6 22 21 20 19.	40&10	
New Haven.	23 26 25 24 23.		
	25&25&25/20&10/10		
Saranac.	23 21 26 19 16 14.	30&10	
Champion.	25 23 22 21 20.		
	10&10/10		
Capewell.	23 26 19 16 14.		
	35&21/35&10/		
Star.	23 21 19 16 14.		
	10&10/10/10		
Anchor.	23 21 26 19 16 14.	35%	
Western.	23 21 26 19 16 14.	40&10	
Empire Bronzed.	14 \$ dos.		
Picture—			
Brass Head, Sargent's list.	50&10/10		
Brass Head, Combination list.	50&10		
Porcelain Head, Sargent's list.	50&10/6&10		
Porcelain Head, Combination list.	40&10/6		
Niles' Patent.	40%		
Nail Pullers.—See Pullers, Nail.			
Nail Sets.—See Sets, Nail.			
Nut Crackers.—See Crackers, Nut.			
Nuts.—List Dec. 18, 1889.			
Square, Hex.			
Hot Pressed.	5.40¢	6.00¢ off list.	
Cold Pressed.	5.00¢	5.10¢ off list.	
in packages of 100 lb. add 1-10¢ \$.			
net: in packages less than 100 lb. add			
2¢ per lb.			
Oakum—			
Best.	\$ B 74&07/4		
U. S. Navy.	\$ B 64&6/4		
Navy.	\$ B 68&6/4		
Oilers—			
Zinc and Tin.	65&10/70/70		
Brass and Copper.	60&10/		

Atkins' Circular Shingle and Heading Hammer, 60¢	Hammer, Hotchkiss, \$5.50, 10% Hammer, Bennis & Call Co.'s new Pat., \$2.50	Smith's Adjustable Milk Strainer, \$ dos \$2.00 Smith's Adjustable T. & C. Strainer, \$ dos \$1.25	Fence staples, Galvanized, Same price Fence Staples, Plain, \$ dos \$1.25
Atkins' Silver Steel Diamond X Cuts \$ foot 70¢	Bemis & Call Co.'s Lever and Spring Hammer, \$0.50	Steve, Wooden Rim, Iron, Plated. Mesh 18, Nested, \$ dos \$1.00 Mesh 20, Nested, \$ dos \$1.10 Mesh 24, Nested, \$ dos \$1.25	See Trd. Rep.
Atkins' Special Steel Dexter X Cuts \$ foot 50¢	Bemis & Call Co.'s Plate, \$1.00		Steelyards, 40¢ to \$50
Atkins' Special Steel Diamond X Cuts \$ foot 32¢	Bemis & Call Co.'s Cross Cut, \$1.25		Stocks and Dies
Atkins' Champion and Electric Tooth X Cuts, \$ foot 30¢	Aiken's Genuine, \$13.00, 50¢ to 10¢ Aiken's Imitation, \$7.00, 55¢ to 5¢		Blacksmith's
Atkins' Hollow Back X Cuts, \$ foot 20¢	Hart's Pat. Lever, \$0.25		Waterford Goods, 40¢ to \$50 Butterfield's Goods, 40¢ to \$50
Atkins' Mulay, Mill and Drag, \$0.40	Diaslon's Star, \$0.25		Lightning Screw Plate, 25¢ to 30¢
Atkins' One-Man Saw, with handles, \$ foot 40¢	Leopold, \$0.40 to 10¢ to 50¢		Reece's New Screw Plates, \$3.40 to \$40
Peace Circular and Mill, \$0.45	Atkin's Lever, \$ dos \$1.00, 50¢		Reversible Hatchet, 30¢
Peace Hand Panel and Rip, \$0.25	Atkin's Criterion, \$ dos \$1.00, 50¢		Gardner, 35¢
Peace Cross Cuts, \$0.45	Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00		
Richardson's Circular and Mill, \$0.45	Avery's Saw Set and Punch, \$0.50		
Richardson's X Cuts, \$0.45	Chieftain H. R. Co.'s Superior, \$ dos \$15.00		
Richardson's Hand, &c., \$0.25			
C. E. Jennings & Co. Hand, Panel and Rip, \$0.25			
Hack Saws—			
Griffin's, complete, \$0.10 to 50¢			
Griffin's Hack Saw, Blades, \$0.10 to 50¢			
Star Hack Saws and Blades, \$0.25			
Burek and Crescent, \$0.25			
Scroll—			
Lester, complete, \$10.00, 25¢			
Rogers, complete, \$4.00, 25¢			
Barnes' Builders' and Cabinet Makers', \$15.00, 25¢			
Burner's Scroll Saw Blades, \$0.25			
Saw Frames—See Frames, Saw.			
Saw Sets—See Sets, Saw.			
Saw Tools—See Tools, Saw.			
Scales—			
Hatch, Counter, No. 171, good quality, \$ dos \$51.00			
Hatch, Tea, No. 161, \$ dos \$6.75 to \$7.00			
Union Platform, Plain, \$2.10 to \$2.30			
Union Platform, Striped, \$2.40 to \$2.50			
Chatillon's Grocers' Trip Scales, \$0.50			
Chatillon's Eureka, \$0.50			
Chatillon's Favorite, \$0.40			
Family Turnbills, \$0.30 to \$0.40			
Ricke Bros.' Platform, \$0.40			
Scale Beams—See Beams, Scale.			
Scissors, Flinting, \$0.15			
Scrapers—			
Adjustable Box Scraper (B. R. & L. Co.) \$0.50	30¢ to 10¢		
Box, 1 Handle, \$ dos \$4.00, 10¢			
Box, 2 Handle, \$ dos \$6.00, 10¢			
Defiance Box and Ship, \$0.25 to 10¢			
Foot, \$0.20 to \$0.60			
Ship, Common, \$ dos \$3.50 net			
Ship, R. I. Tool Co., \$0.10			
Screen Window and Door Frames—See Frames.			
Screw Drivers—See Drivers, Screw.			
Screws—			
Bench and Hand—			
Bench, Iron, \$5.10 to \$5.10 to 10¢			
Bench, Wood, Beech, \$ dos \$2.25			
Bench, Wood, Hickory, \$2.10 to 10¢			
Hand, Wood, \$0.25 to \$0.25 to 10¢			
Lag, Blunt Point, list Jan. 1, 1890, \$0.75 to 10¢ Coach and Lag, Gimlet Point, list Jan. 1890, \$0.75 to 10¢			
Bed, \$0.25 to 10¢			
Hand Rail, Sargent's, \$0.40 to 10¢			
Hand Rail, H. & F. Mfg. Co., \$0.40 to \$0.75			
Hand Rail, Am. Screw Co., \$0.50			
Jack Screws, Millers Falls list, \$0.50 to \$0.50			
Jack Screws, P. S. & W., \$0.50			
Jack Screws Sargent, \$0.40 to \$0.40 to 10¢			
Jack Screws Stearns, \$0.40 to \$0.40 to 10¢			
Cork—			
Humason & Beckley Mfg. Co., \$0.40 to \$0.50			
Williamson's, \$0.35 to \$0.35 to 5¢			
Hove Bros. & Hulbert, \$0.35			
Machine—			
Flat Head, Iron, \$0.50			
Round Head, Iron, \$0.50			
Wood—			
List January 1, 1891.			
Flat Head Iron, \$0.50			
Round Head Iron, \$0.50			
Flat Head Brass, \$1.00			
Round Head Brass, \$1.00			
Flat Head Bronze, \$1.00			
Round Head Bronze, \$1.00			
Rogers' Drive Screws, \$0.35 to \$0.35			
Scroll Saws—See Saws, Scroll.			
Scythes—			
Grain, \$0.40 to \$0.40 to 10¢			
Grass, \$0.40 to \$0.50			
Scythe Snares—See Snares, Scythe.			
Sets—			
Awl and Tool—			
Aiken's Sets, Awls and Tools, No. 20, \$ dos \$0.10, \$0.10			
Fray's Adj. Tool Hds., Nos. 1, \$12.00; 2, \$12.00; 4, \$2.00, \$0.25 to 10¢			
Miller's Falls Adj. Tool Hds., Nos. 1, \$12.00, \$1.00			
Henry's Combination Hft., \$ dos \$0.60			
Brad Sets, No. 42, \$10.50; No. 48, \$12.50; \$0.20 to 10¢			
Stanley's Excelsior: No. 1, \$7.50; No. 2, \$4.00; No. 3, \$6.50, \$0.10			
Not—			
Square, \$ dos \$0.00 to \$0.25			
Round, \$ dos \$0.00 to \$0.25			
Buck Bros., \$0.10 to \$0.10			
Cannon's Diamond Point, \$ dos \$12.00			
Rivet, Regular list, \$0.10 to 10¢			
Screws—			
Stillman's Genuine, \$ dos \$5.00 to 7.75			
Stillman's Imita., \$ dos \$3.25 to 5.25			
Common Lever, \$ dos \$2.00 to 4.00 to 10¢			
Morrill's No. 1, \$18.00; Nos. 3, \$24.00, \$0.25 to 10¢			
Leach's, No. 0, \$8.00; No. 1, \$15.15 to 20¢ \$0.10 to \$0.10 to 10¢			
Hammer, Hotchkiss, \$5.50, 10% Hammer, Bennis & Call Co.'s new Pat., \$2.50			
Bemis & Call Co.'s Lever and Spring Hammer, \$0.50			
Bemis & Call Co.'s Plate, \$1.00			
Bemis & Call Co.'s Cross Cut, \$1.25			
Aiken's Genuine, \$13.00, 50¢ to 10¢			
Aiken's Imitation, \$7.00, 55¢ to 5¢			
Hart's Pat. Lever, \$0.25			
Diaslon's Star, \$0.25			
Leopold, \$0.40 to 10¢ to 50¢			
Atkin's Lever, \$ dos \$1.00, 50¢			
Atkin's Criterion, \$ dos \$1.00, 50¢			
Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00			
Avery's Saw Set and Punch, \$0.50			
Chieftain H. R. Co.'s Superior, \$ dos \$15.00			
Sharpeners, Knife—			
Partkins, Applewood Handles, \$ dos \$6.00, 40¢ Rosewood or Cocobolo, \$ dos \$9.00, 40¢			
Sheaves, Spoke—			
Iron, \$0.50			
Woodley's (Stanley R. & L. Co.), \$0.10 to 10¢			
Stearns', Cincinnati, \$0.10 to 10¢			
Goodell's, \$ dos \$0.00			
Shears—			
American (Cast) Iron, \$7.50 to \$7.50 to 10¢ Barnard's Lamp Trimmers, \$ dos \$3.75			
Tinners', \$ dos \$3.75			
Seymour's, List, Dec. 1881, 60¢ to 10¢ to 10¢ to 10¢ to 10¢			
Heimlich's, List, Dec. 1881, 60¢ to 10¢ to 10¢ to 10¢ to 10¢			
Heimlich's Tailor's Shears, \$0.10 to 10¢ First quality C. S. Trimmers, \$0.10 to 10¢ Second quality C. S. Trimmers, \$0.10 to 10¢			
Aegea Cast Shears, \$0.10 to 10¢ Diamond Cast Shears, \$0.10 to 10¢			
Clipper, \$0.10 to 10¢			
Victor Cast Shears, \$0.10 to 10¢ to 10¢ to 10¢ Howe Bros. & Hulbert, Solid Forged Steel, \$0.10 to 10¢			
Chicago Drop Forge & F. Co., Solid Steel Forged, \$0.10 to 10¢			
Henry's Pruning Shears, \$ dos \$4.25 to 5¢			
Wheeler, M. & C. Co.'s Combination, \$ dos \$12.00, 20¢			
Dunlap's Saw and Chisel, \$ dos \$8.50 to 10¢ J. Mallinson & Co., No. 1, \$6.25; No. 2, 7.25 P. S. & W. Co., \$0.10 to 10¢			
Pruning Shears and Hooks—			
Diaslon's Combined Pruning Hook and Saw, \$ dos \$18.00, 20¢ to 10¢			
Diaslon's Pruning Hook, \$ dos \$12.00, \$ dos \$10 to 10¢			
E. S. Lee & Co.'s Pruning Tools, \$0.10 to 10¢			
Pruning Shears, Henry's Pat., \$ dos \$3.75 to 4.00			
Henry's Pruning Shears, \$ dos \$4.25 to 5¢			
Wheeler, M. & C. Co.'s Combination, \$ dos \$12.00, 20¢			
Holmes & Edwards Silver Co., No. 67 Mexican Silver, \$0.10 to 10¢ No. 30 Silver Metal, \$0.10 to 10¢ No. 24 German Silver, \$0.10 to 10¢ No. 50 Nickel Silver, \$0.10 to 10¢ No. 49 Nickel Silver, \$0.10 to 10¢			
Rogers' Silver Metal, \$0.10 to 10¢ 23¢ Rogers' German Silver, \$0.10 to 10¢ German Silver, \$0.10 to 10¢ Nickel Silver, \$0.10 to 10¢ to 10¢ cash			
German Silver, \$0.10 to 10¢ to 10¢ cash Nickel Silver, \$0.10 to 10¢ to 10¢ cash			
Boardman's Nick' Silver, \$0.10 to 10¢ to 10¢ Boardman's Britannia Spoons, case lots, \$0.10 to 10¢ to 10¢ cash			
Spring—			
Door—			
Torrey's Rod, regular size, \$ dos \$1.20			
Gray's, \$ gr. \$20.00			
Bee Rod, \$ gr. \$20.00			
Warner's No. 1, \$ dos \$2.50; No. 2, \$3.30			
Gen. (Coll.) list April 10, 1886, \$0.10 to 10¢ Star (Coll.) list April 10, 1886, \$0.10 to 10¢			
Victor (Coll.) list April 10, 1886, \$0.10 to 10¢ Champion (Coll.) list April 10, 1886, \$0.10 to 10¢ to 10¢ Philadelphia, 5 in., \$5.00; 8 in., \$7.75; Cowell's, No. 1, \$ dos \$1.00; No. 2, \$15.00			
Rubber, complete, \$ dos \$4.50 to \$5.10			
Hercules, \$0.10 to 10¢ to 10¢			
Shaw Door Check and Spring, \$ dos \$0.10 to 10¢			
Carriage, Wagon, &c.—			
Elliptic, Concord, Platform and Half Scroll, \$ dos \$10 to 10¢ to 10¢			
Cliff's Bolster Springs, \$ dos \$10 to 10¢ to 10¢			
Squares—			
Steel and Iron, \$ dos \$10 to 10¢ to 10¢			
Nickel-Plated, \$ dos \$10 to 10¢ to 10¢			
Try Square and T Bevels, \$ dos \$10 to 10¢ to 10¢			
Diaslon's Try Square and T Bevels, \$ dos \$10 to 10¢ to 10¢			
Winterbottom's Try and Miter, \$ dos \$10 to 10¢ to 10¢			
Starrett's Micrometer Caliper Squares, \$ dos \$10 to 10¢ to 10¢			
Avery's Flush Bevel Squares, \$ dos \$10 to 10¢ to 10¢			
Avery's Bevel Protractor, \$ dos \$10 to 10¢ to 10¢			
Squeezers—			
Puddler, \$ dos \$2.00			
Blair's, \$ dos \$1.25			
Lemon—			
Porcelain Lined, No. 1, \$ dos \$6.00, \$0.10 to 10¢ to 10¢			
Wood, No. 2, \$ dos \$6.00, \$0.10 to 10¢ to 10¢			
Wood, Common, \$ dos \$1.70 to \$1.75			
Dunlap's Improved, \$ dos \$3.75 to 20¢			
Sammis', No. 1, \$5.00; No. 2, \$6.12			
\$1.80 dos \$0.10 to 10¢ to 10¢			
Jennings' Star, \$ dos \$2.50			
The Boss, \$ dos \$2.50			
Dean's, Nos. 1, \$ dos \$6.50; 2, \$8.35; 3, \$11.90; Queen, \$2.50			
Little Giant, \$ dos \$0.10 to 10¢ to 10¢			
King, \$ dos \$0.10 to 10¢ to 10¢			
Hotchkiss Straight Flash, \$ dos \$12.00 to 10¢ to 10¢			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Standard Fiber Ware—See Ware, Standard Fiber.			
Staples!—			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Hotchkiss Straight Flash, \$ dos \$12.00 to 10¢ to 10¢			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Standard Fiber Ware—See Ware, Standard Fiber.			
Staples!—			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Hotchkiss Straight Flash, \$ dos \$12.00 to 10¢ to 10¢			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Hotchkiss Straight Flash, \$ dos \$12.00 to 10¢ to 10¢			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Hotchkiss Straight Flash, \$ dos \$12.00 to 10¢ to 10¢			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Hotchkiss Straight Flash, \$ dos \$12.00 to 10¢ to 10¢			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Hotchkiss Straight Flash, \$ dos \$12.00 to 10¢ to 10¢			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Hotchkiss Straight Flash, \$ dos \$12.00 to 10¢ to 10¢			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Hotchkiss Straight Flash, \$ dos \$12.00 to 10¢ to 10¢			
Blad—			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Barbed, \$ dos \$1.00 to 10¢ to 10¢			
Hotchkiss Straight Flash, \$ dos			

Wire Brads & Nails, see Nails, Wire.	
Steel-Wire Brads, R. & E. Mfg. Co.'s List.	50¢ to 50¢
Tapes, Measuring—	
American.....	40¢ to 45¢
Spring.....	40¢
Chesterman's, Regular list.....	25¢ to 30¢
Thermometers—	
Tin Case.....	80¢ to 10¢
Thimble Skeins—See Skeins.	
Ties, Bale- Steel	
Standard Wire, list.....	50¢ to 10¢ to 5¢
Tinners' Shears, &c.—See Shears, Tinner's, &c.	
Tinware—	
Stamped, Japanned and Pieced, list Jan. 20 1887.....	70¢ to 10¢ to 70¢ to 25¢
Tire Benders, Upsetters, &c.—	
See Benders and Upsetters, Tire.	
Tools.	
Coopers'—	
Bradley's.....	20¢
Barton's.....	30¢ to 50¢
W. L. W.'s.....	30¢ to 50¢
Albertson Mfg. Co.....	25¢
Beatty's.....	30¢
Sandusky Tool Co.....	30¢ to 50¢
Havens, Cincinnati Tool Co.....	30¢
Lumber.	
Ring Peavies, "Blue Line".....	7¢ dos \$20.00
Ring Peavies, Common.....	7¢ dos \$18.00
Steel Socket Peavies.....	7¢ dos \$21.00
Mall. Iron Socket Peavies.....	7¢ dos \$19.00
Cant Hooks, "Blue Line".....	7¢ dos \$16.00
Cant Hooks, Common Finish, #dos \$14.00	
Brade's Brick and Plastering.....	20¢
Worrall's Brick and Plastering.....	20¢
Garden.....	70¢
Tracks, Warehouse, &c.—	
B. & L. Block Co.'s list, '82.....	40¢
Tubes, Beller—	
See Pipe.	
Twine—	
Flax Twine—	
No. 9, 3 and ½ Balls.....	25¢ 34¢
No. 12, 3 and ½ Balls.....	25¢ 34¢
No. 18, 3 and ½ Balls.....	25¢ 34¢
No. 24, 3 and ½ Balls.....	25¢ 32¢
No. 36, 3 and ½ Balls.....	30¢ 31¢
No. 264, Mattress, 3 and ½ Balls.....	54¢
Chalk Line, Cotton, ½ Balls.....	25¢
Mason Line, Linen, ½ Balls.....	55¢
2-Ply Hemp, ½ and ¾ Balls (Spring Twine).....	15¢ to 16¢
3-Ply Hemp, 1 ½ Balls.....	16¢ to 16¢
3-Ply Hemp, 1 ½ Balls.....	16¢ to 16¢
Cotton Wrapping, 5 Balls to ½ Bales.....	15¢ to 16¢
2, 3, 4 and 5-Ply Jute, ½ Balls.....	10¢
Wool.....	6¢ to 10¢
Paper.....	10¢ to 12¢
Cotton Mops, 6, 8, 12 and 15 B to dos.....	18¢
Vises—	
Solid Box.....	50¢ to 10¢ to 50¢ to 25¢
Furnace—	
Fisher & Norris Double Screw.....	15¢ to 16¢
Stephens'.....	24¢ to 30¢
Parker's.....	20¢ to 25¢
Wilson's.....	55¢
Howard's.....	40¢
Bonney's.....	40¢ to 210¢
Millers Falls.....	40¢ to 210¢
Trenton.....	40¢ to 210¢
Merrill's.....	15¢ to 20¢
Sargent's.....	50¢ to 10¢ to 10¢
Backus and Union.....	40¢
Double Screw Leg.....	15¢ to 20¢
Prentiss.....	30¢ to 25¢
Simpson's Adjustable.....	40¢
Moore's.....	30¢
Massey Quick Action.....	20¢ to 25¢
See Pliers—	
Bonney's, Nos. 2 & R. \$15.00.....	40¢ to 10¢
Stearns'.....	35¢ to 40¢ to 50¢ to 210¢ to 250¢
Stearns' Silent Saw Vises.....	35¢ to 40¢ to 50¢
Washers—	
Size hole.....	5-16 ½ ¾ ½ to 13¢
Washers.....	5 6 8 10¢ to 13¢
In lots less than 200, 5, 8, 10, add 1¢, 5-8 boxes 1¢ to list.	
Wedges—	
Iron.....	7¢ to 15¢
Steel.....	7¢ to 25¢
Weights, Sash—	
Solid Eyes.....	7¢ ton \$18¢ to \$19
Wringers, Clothes—	
List September 20, 1889, 2¢ cash.	
Wrought Goods—	
Staples, Hooks, &c., list Jan. 12 1889.	35¢ to 50¢ to 10¢

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Animal and Vegetable Oils.	
Linseed, City, raw..per gal.	57 ● 62
Linseed, City, boiled..	60 ● 65
Linseed, Western, raw..	55
Lard, City, Extra Winter..	57 1/2
Lard, City, Prime..	56 ● 57
Lard, City, Extra No. 1..	55 ● 47 1/2
Lard, Western, prime..	55
Cotton-seed, Crude, prime..	31 ● 32
Cotton-seed, Crude, old grades..	28 ● 30
Cotton-seed, Summer Yel- low, prime off grass..	38 ● 39
Cotton-seed, Summer Yel- low, off grass..	30 ● 36
Sperm, Crude..	72 ● 73
Sperm, Natural Spring..	..
Sperm, Natural Winter..	73 ● 75
Sperm, Bleached Winter..	73 ● 80
Whale, Crude..	..
Whale, Natural Winter..	54 ● 55
Whale, Bleached Winter..	56 ● 57
Whale, Extra Bleached..	58 ● 59
See Elephant, Bleached Winter..	63 ● 64
Menhaden, Crude, Sound..	37 ● ..
Menhaden, Crude, Southern..	..
Menhaden, Light Pressed..	29 ● 30
Menhaden, Bleached W'ter..	81 ● 32
Menhaden, Extra Bleached..	34 ● 35
Tallow, City, prime..	44 ● ..
Tallow, Western, prime..	..
Cocoanut, Ceylon..	64 1/2 ● 7
Cocoanut, Cochin..	84 1/2 ● 9
Cod, Domestic..	43 ● 45
Cod, Foreign..	..
Red Elaine..	35 ● 37
Red Saponified..	7 1/2 44 1/2 ● 44
Bank..	per gal 27 ● 28
Straits..	28 ● 29
Olive, Italian, bbls..	73 ● 75
Nazfoot, prime..	55 ● 65
Palm, prime, Lagos..	54 1/2 ● 61 1/2
Mineral Oils.	
Black, 20 gravity, 25 ● 30 cold test..	per gal 74 1/2 ● 8
Black, 20 gravity, 15 cold test..	84 1/2 ● 9
Black, 20 gravity, summer..	64 1/2 ● 7
Cylinder light, filtered..	15 ● 20
Cylinder, dark, filtered..	14 ● 20
Cylinder, dark, st'red refined..	10 ● 18
Paraffine, 23 1/2 ● 24 gravity..	13 1/2 ● 14
Paraffine, 25 gravity..	12 1/2 ● 13
Paraffine, 26 gravity..	10 1/2 ● 11
Paraffine, red, 21 ● 22 gravity..	15 1/2 ● 13
Paraffine, red, 22 1/2 ● 23 gravity..	13 ● 14
Litharge, kegs..	62 1/2 ● 72
Litharge, blbs. and 1/2 bbls..	62 1/2 ● 72
Paints and Colors.	
Barytes, Prime White..	1 ton \$21.00 ● 22.50
Barytes, Amer. floated..	20.00 ● 20.00
Barytes, Amer. No. 1..	19.00 ● 20.00
Barytes, Amer. No. 2..	15.00 ● 16.00
Barytes, Amer. No. 3..	11.00 ● 13.00
Blue, Celestial..	7 1/2 ● 8
Blue, Chinese..	50 ● 55
Blue Prussian..	25 ● 40
Blue, Ultramarine..	8 ● 25
Brown, Spanish..	34 1/2 ● 1
Brown, Vandyke, Amer..	3 ● 3 1/2
Brown, Vandyke, English..	6 ● 8
Carmine, No. 40, in bulk..	3.10 ● ..
Carmine, No. 40, in boxes or barrels..	3.20 ● ..
Carmine, No. 40, in ounce bottles..	4.20 ● ..
Chalk, in bulk..	1 ton. 2.90 ● 3.00
Chalk, in bbls..	7 1/2 100 bbls. 33 ● 40
China Clay, English..	..
Cobalt Oxide, prep'd..	7.90 ● ..
Cobalt Oxide, black..	10 1/2 100 bbls. 3.60 ● ..
Cobalt, Oxide, black..	less 100 bbls. 3.60 ● ..
Green, Paris, in bulk..	14 ● 15 1/2
Green, Paris, 170 ● 175 bbls. kegs..	14 1/2 ● 15 1/2
Green, Paris, small pails..	14 1/2 ● 15 1/2
Green, Chrome, ordinary..	8 ● 11
Green, Chrome, pure..	23 ● 25
Lead, Eng., Blk, white..	54 1/2 ● 10
Lead, Am. White, dry or in oil..	..
Kegs, lots less than 1000 bbls..	7 1/2 ● ..
Kegs, lots 1000 bbls. to 5 tons..	6 1/2 ● ..
Kegs, lots 5 tons to 12 tons..	6 1/2 ● ..
Kegs, lots 12 tons and over..	6 1/2 ● ..
Lead White in oil 25 bbls. tin pails add to keg price..	14 ● ..
Lead, White, in oil, 12 1/2 bbls pails, add to keg price..	1 ● ..
Lead, White, in oil, 1 to 5 bbls sorted time add to keg price..	2 1/2 ● ..
Lead, Red, bbls. and 1/2 bbls..	6 1/2 ● 7
Lead, Red, kegs..	6 1/2 ● 7
Litharge, kegs..	62 1/2 ● 72
Litharge, blbs. and 1/2 bbls..	62 1/2 ● 72
TERMS, &c.—Lead and Litharge.	On terms of 1000 bbls or over, 60 days' time or 2 1/2 % discount for cash if paid within 15 days of date of invoice.
Ocher, Rochelle..	1.35 ● 1 1/2
Ocher, French Washed..	1 1/2 ● 2
Ocher, German Washed..	1 1/2 ● 2
Ocher, American..	1 1/2 ● 2
Orange Mineral, English..	9 ● 9 1/2
Orange Mineral, French..	10 ● 10 1/2
Orange Mineral, German..	9 1/2 ● 10
Orange Mineral, American..	8 ● 8 1/2
Paris White, English Cliff- stone..	1.00 ● 1.15
Paris White, American..	70 ● 75
Red, Indian, English..	5 1/2 ● 7
Red, Indian, American..	2 ● 3 1/2
Red, Turkey..	9 ● 14
Red, Tuscan..	9 ● 11
Red, Venetian, American..	..
Red, Venetian, English..	7 1/2 100 bbls. 1.00 ● 1.25
Sienna, Italian, Burnt and Powd. 7 1/2 bbls..	5 ● 6 1/2
Sienna, Ital., Burnt Lumps..	1 1/2 ● 2
Sienna, Ital., Raw, Powd..	5 ● 6 1/2
Sienna, Ital., Raw Lumps..	2 ● 3 1/2
Sienna, American, Raw..	1 1/2 ● 2
Sienna, American, Burnt and Powdered..	1 1/2 ● 2
Talc, French..	1 1/2 ● 2
Talc, American..	60 ● 1.00
Terra Alba, Fr'ch. 7 1/2 100 bbls..	90 ● 1.00
Terra Alba, English..	50 ● 60
Terra Alba, American No. 1..	70 ● 75
Terra Alba, American No. 2..	40 ● 50
Umber, Turkey, Bnt. and Powd..	3 1/2 ● 4
Umber, Turkey, Raw and Powdered..	3 1/2 ● 4
Umber, Turkey, R'w Lmp..	2 1/2 ● 3
Umber, Turkey, Bnt. Amer..	1 1/2 ● 1 1/2
Umber, Turkey, R'w Amer..	1 1/2 ● 1 1/2
Yellow, Chrome..	10 ● 14
Vermillion, Amerin, Lead..	11 1/2 12 1/2 17
Vermillion, Quicks'r, bulk..	64 ● 65
Vermillion, Quicks'r, bags..	69 ● 71
Vermillion, Quicksilver, smaller pkgs..	80 ● 85
Vermillion, English Import..	8 1/2 15
Vermillion, Imitation, Eng..	8 1/2 15
Vermillion, Trieste..	87 1/2 90
Vermillion, Chinese..	90 ● 95
Whiting, Common, 7 1/2 100 bbls..	40 ● 45
Zinc, American, dry..	7 1/2 10
Zinc, French, Red Seal..	..
Zinc, French, Green Seal..	..
Zinc, French, V. M. X..	..
Zinc, Antwerp, Red Seal..	..
Zinc, Antwerp, Green Seal..	..
Zinc, German, L. Z. O..	..
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over..	10 1/2 11 1/2
lots less than 1 ton..	11 ● 11 1/2
Zinc, V. M. in Poppy Oil, Red Seal..	..
lots of 1 ton and over..	10 ● 10 1/2
Lots of less than 1 ton... Discounts.—French Zinc.—Discount to buyers of 10 bbl. lots of one or assorted grades, 1 1/2 %; 25 bbls, 3 1/2 %; 50 4 1/2 %. No discount allowed on less than bbl. lots.	10 1/2 10 1/2 10 1/2
Colors in Oil.	
Blue, Chinese..	7 1/2 10
Blue, Prussian..	20 ● 25
Blue, Ultramarine..	12 ● 18
Brown, Vandyke..	7 ● 12
Green, Chrome..	8 ● 13
Green, Paris..	10 1/2 14
Sienna, Raw..	7 ● 14
Sienna, Burnt..	7 ● 14
Umber, Raw..	7 ● 10
Umber, Burnt..	7 ● 10
Spirits Turpentine.	
In regular bbls..	40 ● ..
In machine bbls..	40 1/2 ● ..
Glue.	
Low Grade..	7 1/2 10
Cabinet..	12 ● 14
Medium White..	13 ● 15
Extra White..	17 ● 20
French..	10 ● 12
English..	10 ● 12
Irish..	12 ● 15

